

Colorado Historic Bridge Survey  
Denver  
Denver County  
Colorado

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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
Rocky Mountain Regional Office  
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# INTRODUCTION

## SECTION ONE

Undertaken for the Colorado Department of Highways (CDH) with the cooperation of the Colorado Historical Society (CHS) and the Historic American Engineering Record (HAER), this study presents an historical inventory and evaluation of vehicular bridges currently in use on the state, county and city road systems. It is intended to serve as a cultural resource management tool for both short- and long-term decision-making. By inventorying roadway bridges on a statewide basis the study provides a data base and the contextual background by which individual structures may be evaluated for historical and technological significance. This will aid long-range policy and funding decisions at the outset of the planning process and allow enlightened review of proposed maintenance, rehabilitation and replacement projects. Finally, it will help to guide mitigation measures for construction projects in the future which affect eligible structures. The study is structured for three specific objectives:

To inventory several types of vehicular bridges, giving descriptions of structural configuration and dimensions, present state of integrity and physical condition, location and ownership, with pertinent historical and engineering data.

To present an historical overview of bridge development and construction on national, state and local levels.

To assess all bridges in the survey for relative significance and potential eligibility for the National Register of Historic Places (NRHP) based on historical and technological significance from a comprehensive viewpoint.

The study covers 544 bridges: 139 on the Federal Aid System (on-system), 337 off of the Federal Aid System (off-system) and 51 Federal Aid Urban (FAU); all have been erected before 1945. Several significant structural types have been selected as potentially eligible for NRHP: timber, iron and steel trusses; iron, steel and concrete girders; steel, concrete and stone arches; and concrete rigid frames. Also inventoried are pre-1945 on-system mountain tunnels. Generally not included are railroad bridges and tunnels, bridges in private ownership and those that have been dismantled or permanently closed to vehicular traffic. There are exceptions, however, and 16 railroad grade separations over highways and 17 abandoned, pedestrian and privately owned spans of special significance have been inventoried and evaluated.

There are three basic components to the study - inventory, synthesis and evaluation. The inventory begins with the compilation of a master list of bridges taken from the computer listing of all state and local structures maintained by the CDH. The computer file contains information relating to location, ownership and structural capacity but does not contain data on historical significance. Using records from the computer and general bridge surveys at CDH, the master

list has been assembled and individual structures evaluated preliminarily for significance by structural type and estimated date of construction. Fieldwork - archival research and site inspection - was conducted for each bridge considered potentially eligible for NRHP from the preliminary assessment. The research methodology involved collection of primary and what little secondary source material exists to determine construction date, designer, fabricator and contractor and other pertinent historical information. This research entailed the use of CDH and CHS archival and inventory material, biennial reports to the state legislature from the State Engineer and State Highway Commission, county commission and city council records of proceedings, newspaper and magazine articles, original contracts and agreements, records from other government and archival sources and oral interviews with county commissioners, engineers and road supervisors, historians and other knowledgeable sources. A bridge field inspection report form (included in Section 5, Appendices) has been produced, and the significant bridges have been documented in the field using field notes and 35mm photography.

The data compiled during the inventory has been accessioned into the Fraserdesign computer in three data groups: structural, historical and locational. Information recorded includes temporary number, bridge name, structure number, county, city, highway engineering district, highway route, feature intersected, USGS quadrangle map and UTM coordinates (for significant bridges), cadastral references, present owner, super- and substructure type, span and overall length, overall and clearance height, roadway width, present condition, sufficiency rating, date of erection, designer, fabricator, contractor, original location (if Moved), known alterations, representation in prior surveys and the numerical rating for historical significance. This data is presented in the report in the form of the bridge inventory lists in Sections 3 and 5 and the HAER inventory cards for the more significant structures.

The synthesis part of the study involved collection of information from primary and secondary sources to assemble an overview of bridge and transportation trends in Colorado. Bridge construction was related to settlement and economic development within the state, and national technological trends were compared with state and state with local to provide a framework within which specific bridges were evaluated. The overview comprises Section 2 of this report.

The final component is evaluation. Using data compiled during the inventory, the bridges were evaluated separately within the context of the overview and compared for relative historical and/or technological significance using a numerical rating system developed for this survey. Each bridge was categorized into one of three groups according to potential eligibility for NRHP, and the findings were presented to an Advisory Board for review. A final list of bridges considered eligible was drafted and a thematic nomination prepared and submitted to the National Register, completing the inventory aspect of the bridge survey.

# OVERVIEW

## SECTION TWO

Bridges, as integral elements of a developing transportation network, have played a pivotal part in the spanning of the North American continent. Generally the most sophisticated components of any overland transportation system, from the early primitive territorial roads to the transcontinental railroad, they are also the most prominent, and serve not only as gauges of technological advancement in design and construction, but as singular indicators of the tenets, values and ambitions of the people who erected them. "Abroad, transportation systems and the paths, passages and crossings on which the systems operated were created to serve an existing society. In America, they helped to create the society ... and make a single, unified nation."<sup>1</sup> While descriptive of the country in general, this is particularly true for Colorado, a state in which overland transportation forms a central historical theme. From the earliest wooden spans along the Santa Fe and Smoky Hill Trails and the rough crossings over the South Platte and Cherry and Clear Creeks put up during the first gold boom, to the later iron and steel trusses for wagon roads and multiple-span urban viaducts for vehicular and tramway use, bridges have facilitated and in some instances created settlement across the state.

### BRIDGE DEVELOPMENT IN AMERICA

The underlying function of a bridge is simple: to get to the other side. Whether spanning rivers, creeks, inlets, sloughs, draws, arroyos, canyons, etc., their primary purpose has remained unchanged since the first log was thrown across a stream, with differences only in dimensions and capacity. Beyond that rather simpleminded purpose, however, the idea soon begins to unravel, as a plethora of forms to achieve that function has sprung up through centuries of trial-and-error usage. Bridge types can generally be classified by material: stone, timber, iron/steel and concrete. The inherent strengths and weaknesses of each tend to dictate its form and usage (for example, imagine a stone truss), as does availability of materials. By the time America was undergoing initial settlement, most of the principal bridge types and materials had been used or at least experimented with. What remained over the last two centuries has been a process of refinement - a vast refinement to be sure - revolving principally around the introduction and proliferation of structural metals and concrete as building materials.

The first records of bridgebuilding in this country can be traced to the early English settlements on the East Coast. The first American bridge was perhaps one built in the seventeenth century at Jamestown Island in Virginia. This 200 foot long structure did not cross a stream, but was erected over the James River as a wharf to provide docking facilities for small ships.<sup>2</sup> The major bridge builder of the eighteenth century, Samuel Sewall, apparently built the first

highway bridge of importance in the country across the York River at York, Maine, in 1761. Supported by four pile bents every 19 feet, it was 25 feet wide and 270 feet long. It, like virtually all of the early American spans, was made of wood. Abundantly available and relatively easily designed and constructed, timber was the material of necessity for decades. Shipbuilder Thomas Pope in 1811 stated a commonly held view of the time, equating forests and bridges with the taming of the wilderness and a sense of manifest destiny:

It is a notorious fact that there is no country of the world which is more in need of good and permanent Bridges than the United States of America . . . Nature, ever provident for Man, has, however, afforded us ample means of remedy. Our forests teem with the choicest timber; and our floods can bear it on their capacious bosoms to the requisite points. Public spirit is alone wanting to make us the greatest nation on earth; and there is nothing more essential to the establishment of that greatness than the building of Bridges, the digging of canals, and the making of sound turnpike roads.<sup>3</sup>

The first wooden bridges were merely plank bridges - the equivalent of the log across the stream. Limited in span to the log length and its carrying capacity, they were used for only the shortest crossings. Without proper support, they became unduly strained by tension forces from the bending moment, stretching or tearing the fibers and weakening the inherent strength within the plank, leading to failure: the log broke. An advancement over this was the first significant bridge form in America, the pier bridge, also called the pike-and-beam bridge. Another ancient bridge type, it consisted of timber or log stringers spanning between timber piers, spaced every 10 to 30 feet. In places where loose or shifting sediment proved unsuitable or was too deep for stone foundations, wooden piles were driven into the river bed to support the roadwork. A variation on the pier design, the crib bridge, used stacked logs for the piers. Both types have received widespread use throughout history, and one of the more notable examples was Caesar's bridge across the Rhine. Built in 55 BC, it was 1800 feet long, 40 feet wide and comprised of 50 spans. Timber stringer bridges were used extensively on the coastal East and further inland, as the settlement line moved westward. The Great Bridge across the Charles River was built in 1668 using a cribbed log design; it served as an important link between Boston and areas to the north and west for nearly 130 years.<sup>4</sup> Consisting of multiple short spans of timber beams resting on pilings or cribs, timber stringer bridges were impractical across wide rivers, and most were eventually replaced with timber trusses in the last decade of the eighteenth century. Nevertheless, timber stringer bridges are the most commonly built vehicular bridge type, one which continues to be built for minor crossings still.

Stone was another material which was transferred from Europe to America. Long known for its compressive strength and durability, stone (or more specifically the mortar joints between the stones) has no tensile strength and must rely on transmission of compressive forces through arching. Outstanding stone or brick bridges have been attributed to the Romans, Greeks and Babylonians. Evidence of pointed brick arches has been found which date back to about 4000 BC, and one early historian writes of a bridge in the center of Babylon which featured a center brick arch 660 feet long.<sup>5</sup> This last seems improbable, however. Between 600 and 500 BC the semicircular arch began being used by the Romans and

soon became the only type used. Tarquinius Priscus is reputed to have built a three-span semicircular bridge, known as Pons Salarius, over the Tiber at Rome around 178 BC. It was followed in 100 BC by a similar structure called Pons Milvius, which is still standing today in altered form.<sup>6</sup> Bridge construction lapsed during the Middle Ages. Perhaps the most famous of the Medieval bridges was the old London Bridge over the Thames, built about 1200 by Priest Peter of Colechurch. It consisted of a series of massive stone arches which rested on piers twenty-five to thirty-five feet thick and occupied two-thirds of the waterway. It was replaced by the later London Bridge in 1821.<sup>7</sup> Although used extensively in Europe, stone was largely eschewed in this country in favor of timber and was used only marginally for bridge superstructures. Nevertheless, some stone structures were erected in situations in which strength and permanence were more important than initial cost. Perhaps the first stone bridge in America was the Frankford Avenue Bridge over Pennypack Creek in Philadelphia. Built in 1667 on what was once the King's Road to New York, it still stands today, though significantly modified through subsequent widenings and reinforcement.<sup>8</sup> The use of stone was generally restricted to substructural work. There its rigidity and resistance to scouring from water made it the preferred material for piers and abutments until early in this century.

Though by far the most common bridge type, the timber stringer was not really very sophisticated. More technologically innovative was a bridge type which has been termed "primarily an American achievement," the truss. The introduction of the truss marked the beginning of more sophisticated bridge design in America. As with other structural types, the truss form had been imported from Europe. The basic design dates back at least as far as 3rd Century BC Greece and was later adopted by the Romans. Truss-like elements can be seen on Trajan's Column in Rome, which depicts the 104 AD bridge crossing of the Danube by the Emperor.<sup>9</sup> No written record confirms the use of trusses during the Middle Ages, and most bridges of the time were simple timber trestles. The Europeans had learned structural design from the Romans, though, and used the truss as roof support in the great cathedrals. Cathedral master builder Villard de Honnecourt in the 13th Century sketched what has been described as "a kind of a truss bridge."<sup>10</sup>

It would not be until the Renaissance that the truss would become formally associated with bridge design in Europe, as the timber trestle gradually developed into the truss. Andrea Palladio, in his four-volume engineering classic I quattro libri della architettura (The Four Books of Architecture), included four truss bridge designs, and he is known to have built one of them. Admitting his designs were not original, Palladio acknowledged his debt to German builders. In 1742, Palladio's treatise was translated into English and probably made its way to America soon after. The first known American bridge based on the truss principle was built two decades later, in the 1760s, by John Bliss. Called a "geometry-work bridge," it spanned the Shetucket River near Norwich, Connecticut.<sup>11</sup> Timber bridges which were hybrids of truss and arch were built in Germany and Switzerland in the 18th Century. Amazing spans which defied structural analysis, several were erected near Baden, Germany, by John and Ulrich Grubenmann, the longest of which was 390 feet in length - the longest timber span of record.<sup>12</sup> But the great development of truss design took place in America.

The extent of European influence on American designers is not known. "It is probable that most literate men among them were aware of European developments. It is also conceivable, however, that the truss, such an obvious device to anyone familiar with the rudiments of framing, may have evolved independently in America."<sup>13</sup> Prior to 1840, most of the evolution in this country involved continually more sophisticated wooden trusses and arches. In only fifty years the kingpost, the most basic form of truss, consisting of an A-frame with central support, had developed into several more complex variations. A handful of New England carpenters and a German-born Philadelphian began the process which would put the truss in the forefront of American bridgebuilding. Timothy Palmer, a millwright from Newburyport, Massachusetts, built a two-trussed arch which resembled one of Palladio's designs over the Merrimac River in 1792; the longer arch measured 160 feet. He surpassed that with a 244' trussed arch over the Piscataqua in New Hampshire and later built trusses over the Delaware, Schuykill and Potomac Rivers - all successful from both engineering and commercial standpoints.

Palmer soon began sheathing his bridges with wood plank and shingle coverings to protect the timber structural members from weathering and the deck from accumulations of snow. He was not, however, the first to cover bridges; New England carpenter Theodore Burr, supposedly a relative of Aaron Burr, was the first to design and build a covered bridge: the Waterford Bridge over the Hudson River in New York in 1804. Another innovation in bridgebuilding, introduced by German-born Lewis Wernwag, was the use of iron diagonals for tension members in the truss panels. But the person who had the greatest influence on timber design of the time was Burr. He designed a truss, patented in 1806, which featured straight top and bottom chords with an arch superimposed for added strength. Unsurprisingly named the Burr arch-truss, it soon became popular in America.

By the 1820s truss design was becoming more sophisticated. The empirical trial-and-error method was eschewed in favor of increasingly skillful design. Architect Ithiel Town received a patent for his lattice truss in 1820 - the first truly American development.<sup>14</sup> Called the Town Lattice, it had no upright posts, but instead was made up of a network of cross-hatched diagonal members. With tension and compression members indeterminate in the multiple intersections, it could be used continuously over intermediate piers - the first continuous truss. The lack of supporting posts and thinness of the web gave the truss a propensity to warp and twist, especially on long spans, but in spite of this it gained popularity as an easily erected, cheap bridge. By 1835 Town had doubled the webbing to make his truss better suited for railroad bridges. The Town Lattice was the last all-timber bridge to be used in the country for any considerable span.<sup>15</sup>

The Long Truss, patented in 1830 and 1839 by Colonel Long, was the first to incorporate panel counterbracing systematically. Although these early bridges were developed for roadway traffic, the great proliferation of truss types in early 19th Century America was directly attributable to the railroads. Such spans as the Howe, Pratt and Whipple - all named after their inventors - were developed to handle the heavier loads, longer crossings and greater rigidity

requirements of the railroads, and any number of configurations could be used and still allow the bridge to behave as a unit while also being sufficiently rigid. Massachusetts millwright William Howe's contribution, patented in 1840, was a truss design which used timbers for the upper and lower chords and the diagonal compression members but substituted wrought iron for wood in the vertical tension members. His combination wood/iron design represented an improvement in spanning and carrying capacities over its all-timber predecessors, and because of its greater strength and uncomplicated erection, became the standard American railroad bridge before 1850. A series of disasterous collapses of Howe trusses in the late 19th Century, however, combined with the maintenance problems of wood, directed railroad truss design toward all-metal configurations.<sup>16</sup> But the wooden Howe truss was not exclusively a railroad bridge and continued to be used extensively for vehicular bridges well into this century. "The various economies of the Howe covered bridge caused it to be built where alternatives would have meant ferries, monstrosities of steel or concrete, or no bridge at all. It brought an ease of transport and communication that helped untie the West from the watery web that was delaying its development."<sup>17</sup>

In 1844 Thomas and Caleb Pratt received a patent for what would become known as the Pratt truss - one of the first scientifically designed bridges. The Pratt resembled the Howe, except the verticals were the compression members and the diagonals tension. This has the effect of shortening the compression members, increasing their theoretical crippling load and substantially strengthening the bridge. The first Pratt trusses, like Howe's, used a combination of wood for compression members and iron for tension, but never gained the popularity of Howe's design because they required a greater quantity of then-expensive iron. In 1840 Professor Eaton Hodgkinson published results of testing on cast and wrought iron columns to determine constants for Euler's theoretical formulas, developed almost a century before. This, combined with research and development of others and the increased production of structural metals, led to their growing acceptance in bridge construction. As the cost of iron decreased during the 1870s and 1880s, all-metal versions of trusses received far greater use, and the Pratt design eventually overshadowed the Howe for both roadway and railway use.

All of these early truss designs were based upon the experience and judgement of their designers. Some of the early developers may have based their plans on mathematical theory, but there was no published analysis of stress in members until Squire Whipple's 1847 An Essay on Bridge Building. The book rationalized truss bridge construction and design and "launched the science of bridge engineering."<sup>18</sup> Whipple, largely self-taught, is responsible for the world's first scientifically designed metal bridge,<sup>19</sup> a cast iron arc truss over the Erie Canal at Utica, New York, built in 1840. In 1841, he received a patent for his "Iron Bowstring Bridge." In the 1850s, Plympton and Murphy made a model of a truss in which members could be replaced with a spring balance to measure stress. That decade saw dramatic advancements in bridge design as engineers like Fink, Latrobe and Bollman began mathematical analysis and design of trusses. In 1855 the first double-intersection Warren was constructed using cast and wrought iron components; four years later, the first pin-connected truss was erected by J.W. Murphy for the Lehigh Valley Railroad, and Howard Carroll erected the

first all-wrought-iron bridge for the New York Central Railroad.<sup>20</sup>

During the second half of the 19th century the big story was metal. As structural metals became first available and later economical, engineers and contractors rushed to design, either empirically or mathematically, trusses which could use them to advantage. Although the manufacture of cast iron had begun in the 15th century, the first cast iron bridge was not erected until 1776. An arch with a central span of 100 feet, it crossed the Severn River at Coalbrookdale, England.<sup>21</sup> Cast iron was created in a mold, high in oxygen, and was brittle. It was suitably used in compression, but in tension it proved unpredictable, and as a result cast iron was most typically used for arched structures. Hodgkinson's experiments had pointed out the superiority of wrought iron over cast. Free of carbon, more resistant to corrosion and stronger as a result of continuous rolling and hammering, it was also more expensive to produce than cast iron, and therefore saw more restricted use up until the late 1860s. At that time westward expansion pushed the railroads over the great rivers of the Midwest, requiring more technologically sophisticated solutions to bridging. Also during that decade the Phoenix column was created by the Phoenix Bridge Company. This, combined with a series of major cast iron bridge failures, effectively supplanted cast iron with wrought.

Bridges became longer and safer when steel replaced iron as the major structural material in the 1880s. Stronger, more reliable and more versatile than iron, steel had been expensive and could be produced in only limited quantities throughout most of the century. Puddled steel had first been used in bridgework for the eyebar chains of the 300' suspension bridge at Vienna, Austria. But its use was limited for decades to follow by the prohibitive costs and distrust within the design profession. In 1856 Englishman Henry Bessemer patented a process of steel fabrication which would remedy these problems, and by 1878 General William Smith proved that an all-steel bridge could be built economically with the completion of a steel railroad bridge across the Missouri River at Glasgow, South Dakota. According to engineer Theodore Cooper in the 1880s: "Steel must struggle for precedence with iron as iron did with wood in the past forty years, and it will undoubtedly in the end be as victorious."<sup>22</sup> By the 1890s steel was the preferred material and the truss the preferred design for short- and medium-span roadway bridges.

During the period several new truss designs were patented. The Pratt, Whipple and Warren had by that time become the mainstays of the profession for both railroad and vehicular use. The basic Pratt design was then split into a variety of subtypes: the Parker, with its polygonal top chord, Pennsylvania, Baltimore, Camelback (described by Waddell as "uncompromisingly ugly" and structurally unsound),<sup>23</sup> Kellogg and the spectacular Lenticular truss; these as a group constituted the vast majority of vehicular trusses built in the 19th century. Several other designs were also patented: the Pegram, Fink, Solliman, Stearns and Thatcher, among them. Esoteric and in some cases structurally questionable, these never received as widespread use as the Pratts and Warrens. After the turn of the century the pattern was set; steel was the material to use, and no new truss designs of significance were patented. Truss design was by then a matter of refinement and expansion of existing ideas.

Although the truss received most of the attention within the engineering profession, other types of metal bridges were undergoing simultaneous development in the 19th century. One of these was the girder. An elaboration on the simple stringer bridge, with two to six main spanning beams to which the floor beams are attached perpendicularly, the girder form became associated primarily with railroad construction. The first patent for an all-iron bridge was taken out by August Canfield in 1833, and in 1840 the first roadway bridge of that type was put up over the Erie Canal at Frankfort, New York. A girder with a 77' span, it featured cast iron girders with cast and wrought iron tension rods which formed an inverted bowstring. A plate girder railroad bridge was built as early as 1846, and as the cost of wrought iron decreased, girders began to proliferate during the 1870s and 1880s. With their deep profiles made up of iron or steel plates and rolled metal flanges and web stiffeners, girders were ideally suited for railroad crossings because of their inherent rigidity and ease of erection. Their drawbacks were that they required more then-expensive metal than comparable-length trusses and were usually built in-shop and hauled assembled to the sites, limiting their effective span to the length of a flatcar. Nonetheless, deep-profile plate girders were used extensively for short-span railroad bridges from the 1890s to the 1920s. Although roadway girders were also built during the time, they tended to be less economical than other bridge types and were used principally for special-use situations such as heavily trafficked urban bridges and viaducts.

Two other metal bridges which received some use in the 19th century were the suspension and cantilevered bridges. Both had roots in ancient usage, predating the truss. Known to the Chinese as early as 56 AD, the suspension bridge was not discovered by the Western world until the 16th century. Typically supported by ropes, these bridges were curved, swayed and quite unstable; it was not until the fabrication of iron chains that more stable designs could be erected. The first suspension bridge in America was built in 1786, and by 1808 over forty had been built.<sup>24</sup> Used only intermittently by the railroads, suspension spans received increasing vehicular use through the end of the 19th and the first decades of the 20th centuries and really came into their own for long-span highway bridges built in the 1920s and 1930s. The oldest cantilevered bridge of record is the Shogun's Bridge, constructed in 4th century Japan. The Kentucky River Bridge at Dixville, Kentucky, built in 1876, marked the beginning of long-span modern cantilevered bridges. Like the suspension bridge, it is a design which has received intensive use in the early 20th century.

Concrete was a material which did not receive much use for bridge superstructures until after the turn of the century. Like masonry, concrete is notoriously weak in tension and lends itself best to substructural work and to arching. Concrete arches had been constructed by the Romans. After the Fall, however, builders relied on natural cement, which varied greatly in quality and was generally poor. In 1824 Joseph Aspden developed a standard material - Portland cement - that offered superior bonding and plasticity. Experiments in Europe revealed that by reinforcing concrete with embedded steel rods, the material became stronger and acquired tensile strength. Similar experiments in this country led to the first use of reinforced concrete in 1889 on the Alford Lake Bridge by Ernest Ransome. From 1890 to 1900 over 150 reinforced concrete spans were built on scales ranging from minimal to monumental.<sup>25</sup>

The turn of the century saw an explosion of concrete bridge construction, attributable in large part to one designer - Daniel B. Luten. Using a series of wide-ranging patents taken out between 1900 and 1906 for reinforced concrete arches, Luten absolutely controlled the concrete bridge industry in America. His lawsuits were repeatedly held up in court, forcing virtually all archbuilders to pay patent royalties to the Indianapolis-based engineer. Luten's arches were innovative: featuring sometimes highly elliptical profiles, they were sophisticated in their dependence on steel reinforcing and allowed relatively thin concrete sections at midspan. Termed Luten arches, they were built extensively from 1905 through the 1920s. Luten's stranglehold on the industry was broken in January 1918, when a Des Moines judge ruled that the broadly worded patents were invalid.<sup>26</sup> The Iowa location is significant, for the suit challenging Luten's patents was initiated by America's other most significant concrete bridge designer, James B. Marsh of Des Moines. The suit opened archbuilding up in the country, and the concrete arch received increased use as a vehicular bridge type. Marsh himself had patented a reinforced arch design in 1912, called the Marsh, or Rainbow, Arch. It was self-described as "two abutments (which could be piers), a pair of arches disposed between and springing from the abutments, the floor carried by and between the arches and reaching from one abutment to the other where it alines (sic) with the parapets or rails along opposite sides of the floor line."<sup>27</sup> Marsh arches were essentially steel bridges sheathed in concrete, costly to construct, and were built sparingly for highway use into the 1930s.

The dull color of concrete bridges contrasted with the Veblenian size of steel trusses, sparking professional debate on aesthetics and scale. To engineers interested in technological achievement, the monumental skeletal structures of steel illustrated perfectly form and function and their designs. Moreover, those like Thomas Clarke saw utility and not sculptural art as of primary importance:

Where so many bridges had to be built in a short period of time, aesthetic considerations are little regarded. Utility alone governs their design. So long as they are strong enough, few care how they look.<sup>28</sup>

On the other side were those that held the arched form to be the highest kind of bridge design. Concrete arches provided the opportunity for applied ornamentation in the form of incised panels or classical balustrades that the starkly functional truss did not. Moreover, proponents of the arch argued, correctly, that it was structurally superior, more rigid under traffic and more resistant to flooding. Ultimately, however, the decision between concrete or steel was often an economic one: concrete in most applications cost more than steel.

A common thread which runs through all the major bridge types is the method of their construction. With the rise of industrialization, the expansion of settlement into the West and the proliferation of overland transportation networks, a new industry - bridge fabrication - was initiated. A number of companies were founded after 1850 to fill the demand for roadway and railroad truss bridges. In the years after the Civil War their numbers jumped - from

a total of five in 1860 to 75 in 1870, 137 in 1890 and almost two hundred by 1900.<sup>29</sup> Few bridge engineers at the time completely understood stress analysis and truss design, allowing the national firms to gain power in a rapidly expanding market. Railroad bridge companies seldom built vehicular bridges, and vehicular bridge companies usually stayed away from railroad construction. Each company prefabricated its own type of bridge components, had its own bridge codes and marketed its own brand of bridge design, usually on a regional basis. Typically these foundaries would patent standardized truss variations and mass-produce the individual members, depending on the speed and economy of the operations for profit. The accepted practice was for the various bridge companies to submit competing bids for specific bridges, with each company submitting its own plans and specifications for the bridge design. "This was satisfactory when the contractor had a competent engineer or retained a knowledgeable consultant, but this was seldom the case. While many safe and satisfactory bridges were built by this procedure, there were also many unsatisfactory ones."<sup>30</sup> From 1850 to 1875, twenty-five or more bridges failed each year.

Highway bridges failed more frequently than railroad bridges, as economy-minded state or county officials with no technical knowledge contracted for local roadway bridges. Economy was the foremost consideration, with the bottom line in the competitive bidding being the proposed cost; bridge design was secondary, assumed by the locals to be adequately safe. As a result, "fly-by-night operators sold whenever and however they could, threw together a bridge, and moved on in a hurry."<sup>31</sup> As the need for educated design grew, engineering curricula, begun in the 1850s, were added to universities across the country. Additionally, professional periodicals such as Engineering News, Engineering Record and the Transactions of the American Society of Civil Engineers began publication. By the 1880s engineers had begun to take a more intense interest in the principles of bridge design and produced treatises on stress, floor designs, load factors, alloys and the preservation of metals. Additional literature appeared at the turn of the century with the publications of university engineering research stations, pamphlets and books. The most influential of these was J.A.L. Waddell's encyclopedic Bridge Engineering, published in 1916. As the engineering profession grew, so did their concern - partly self-serving, to be sure - for non-engineered bridges. Stated the Engineering News in 1887:

The greatest danger from weak bridges is not likely to be found in a road which confessedly has no officer who knows anything about them for such a road generally calls in some competent expert and gives the bridge an intelligent overhauling, occasionally at least. But when we come to a road which keeps a bridge superintendent whose boast is that he is a practicing bridge carpenter and has followed the business for forty years, then we may look out for danger ahead.<sup>32</sup>

Few of the early bridge manufacturers were still in business at the turn of the century. In 1900 the completion of the entire industry changed radically. Stating: "as a result of numerous conferences, it has been deemed expedient to organize the American Bridge Company, incorporated for the purpose of

designing, building and erecting bridges and all classes of metallic structures," the country's largest bridge company was formed. The American Bridge Company represented an immense merger of virtually all of the national bridge fabricators of the time; among them were the Union Bridge Company of Athens, Pennsylvania, Berlin Iron Bridge Company of East Berlin, Connecticut, Edge Moor Bridge Company of Wilmington, Delaware, Groton Bridge and Manufacturing Company of New York, Keystone Bridge Company of Pittsburgh, Youngstown Bridge Company of Youngstown, Ohio, Wrought Iron Bridge Company of Canton, Ohio, New Jersey Steel and Iron Company of Trenton, New Jersey, and the Milwaukee Bridge Company of Wisconsin, among many others. This effectively molded most of the competing firms into one gargantuan company, which then fabricated and erected thousands of railroad and vehicular bridges across the country. Against this Goliath of the industry several Davids still struggled to compete, mostly from local bases in the West and Midwest. These included companies like the Missouri Valley Bridge and Iron Company of Leavenworth, Kansas, the Kansas City Bridge Company and Midland Bridge Company of Kansas City, Missouri, and the Colorado-based Pueblo Bridge Company and Charles G. Sheely Construction Company.

After 1900 the bridge companies had two more decades of intense activity before the industry again changed. Following the passage of the Federal Highway Act in 1916, bridge design generally fell to the highway departments of the states, and contracting became more locally oriented. The industry change also marked change in the design of bridges from wagon bridges to highway types and the decline of several structural types. The truss was superceded by other bridge types, and the once generic form of metal bridge has been replaced with I beams and box girders. Colorado has been a relative latecomer in bridgebuilding history, missing the first century of truss development entirely, but transportation has played an important role in the state's early development, and several of the bridges left standing in the state are significant remnants of technological and historical trends.

#### BRIDGE BUILDING IN COLORADO

As the East was experiencing the nation's greatest surge in bridge innovation during the 1840s, Colorado received only a trickle of emigrants passing through on the way to other places. For years the problems of a high, treeless and arid region had proved too novel a situation for the first droves of pioneers bound for the West Coast. Possessing an Eastern bias against a country not covered with trees, most believed the soil to be worthless because it did not support lush foliage. The High Plains, characterized by Washington Irving in his 1836 account of the fur trade, Astoria, as "undulating and treeless plains, and sandy wastes, wearisome to the eye from their extent and monotony" and by the chronicler for the 1820 expedition of army explorer Stephen H. Long as the "Great American Desert," were generally considered to be an obstacle or barrier to be crossed quickly. Additionally the daunting north-south chain of mountains

\*Note: Bridges nominated to NRHP are shown by an asterisk after the bridge name.

effectively diverted emigrant traffic to either side of the Colorado region. It would not be until later that the first gold rush of 1859 would bring explosive settlement in its wake and with that the need for permanent river and stream crossings.

The Spanish were the first Europeans to enter present-day Colorado, venturing into the San Luis Valley from New Mexican settlements sometime before 1694. They continued to make forays throughout the region, alternatingly trading and proselytizing with the Indians for the next century. The first organized route through the region was the Santa Fe Trail. Initially plotted by Missouri trader William Becknell in 1821 and 1822, it functioned as the primary link between the United States and the Mexican settlements of Santa Fe and Taos. The former country had an abundance of trade goods and the means to transport them, the latter, gold, silver and furs. It was an extremely lucrative trade arrangement for the freighters who plied the Trail, and travel soon became a "more-or-less organized enterprise."<sup>34</sup> For thirty years wagon trains, some with as many as 400 wagons, passed through this natural corridor. Becknell had actually scouted two branches of the Trail, which split at Cimarron in southwestern Kansas. The shorter one - the Cimarron Cutoff - barely nicked the southeast corner of Colorado as it traced the Cimarron River southwest. The Mountain Branch followed the Arkansas River past Fort Lyon and Bent's Old and New Forts, branched off near Timpas Creek at present La Junta and headed southwest past present Trinidad over Raton Pass. The Cimarron Route featured a dangerous fifty-mile stretch across the Cimarron Desert, and the Mountain Route presented a difficult climb over Raton Pass; both risked continuous danger of Indian raids from Comanche and Kiowa bands. With no organized road maintenance, trains typically were forced to make their own roads. With no bridges on the route, all of the crossings were fords. Frequently forty to fifty head of mules were required to pull each booty-laden wagon across the streams and rivers, and during spring and summer flooding trains were often obliged to camp and wait for passable conditions.

Throughout the 1820s, 30s and 40s, the Santa Fe Trail, with its extension further up the Arkansas to fur trading camps near present-day Canon City, remained the only major route to cross Colorado. Between 1850 and 1858, however, two others were cut into the central part of the state. The Smoky Hill Trail followed the "Golden Belt" route to Oakley, Kansas, then traced the Kansas River west to the Smoky Hill River, past present Cheyenne Wells, Limon, and into Denver. This route was later used by D.A. Butterfield for his stage line to Denver and Salt Lake City. The other trail entered the region from the northeast and followed the South Platte River to a point near Greeley, where it branched westward and northward to La Porte, Virginia Dale and up into Wyoming. Called the Overland Trail after the stage line that improved and used it, it also branched off toward Denver at three locations: one across the plains near Fort Morgan, one at Latham near Greeley and one at La Porte near Fort Collins.<sup>35</sup>

The Santa Fe Trail was mostly a freight route. These latter two trails were maintained principally for overland staging. The first real overland stage

to serve Colorado was the Leavenworth and Pike's Peak Express, which made its initial arrival into Denver on 7 June 1859. It followed a third route between the Solomon and Republican Rivers, westward to Cherry Creek and then into Denver. The line was reorganized the next year under the ownership of Alexander Majors, an experienced Missouri freighter, and two partners, W.B. Waddel and William H. Russell, under the name of the Central Overland California and Pike's Peak Express (C.O.C. and P.P.E.). The three men owned freighting lines which operated on the Oregon Trail across Nebraska and Wyoming, dominating freighting in the plains, and dispatched coaches three times weekly. The stage operation lost money so quickly, however, that it acquired the derisive alternate name "Clean Out of Cash and Poor Pay." The partners' final bid for solvency was through a government subsidy for the Pony Express, that dash across the country that began in April 1860. Though the spectacle of the Express received much favorable attention, the federal subsidy never materialized, and the firm continued to slip toward bankruptcy. With the completion of the transcontinental telegraph in October 1861, the Pony Express was doomed, and Majors, Russell and Waddel, overextended and bankrupt, faded into oblivion. In 1862 their interests were purchased by Ben Holladay, the perspicacious "Stagecoach King." Holladay immediately renamed the company the Overland Stage Line and rerouted the stages to the Overland Trail across northern Colorado and southern Wyoming. Holladay and Butterfield were in direct competition for the Denver business, as explained by F.L. Bartlett:

There was much rivalry and many record runs were made. Holliday (sic) made the trip himself for a test from Atchison, Kansas, to Placerville, California, 2,000 miles, in 12 days. Albert Ruchardson made the run from Atchison to Denver in 4½ days, and Butterfield was advertising regular trips from the Missouri River to Denver in 8 days and often made them in 6 days.<sup>36</sup>

Both the Overland and Smoky Hill Trails were routed to avoid major river crossings and the need to construct and maintain bridges. The crossings which could not be avoided were forded, and for crossings too high or swift to ford, the Concord stages had been constructed to float and double as ferries - a hair-raising experience, to be sure.

Overland staging in Colorado through the 1850s was at best a marginal venture. All this changed, though, after gold was discovered by the Russell brothers at the mouth of Dry Creek in 1858. Insignificant in itself, the find sparked a wildly explosive pattern of exploration, speculation and settlement which would be repeated in various permutations across the state for decades to follow. Close on the Russells' heels was a group of prospectors from Lawrence, Kansas, who almost immediately gave up panning for gold to stake out a town called Montana City north of Dry Creek. This quickly withered as they moved to the east side of Cherry Creek with a second town - St. Charles - and returned to Kansas Territory to take out a charter. As prospectors began pouring into the Cherry Creek area in autumn 1858, a second town company - the Auraria Town Company - was formed immediately across Cherry Creek from St. Charles. When General William Larimer and his group arrived in mid-

November, they took over the St. Charles townsite and renamed it Denver City after the governor of Kansas Territory, General James W. Denver. Other towns quickly sprang up in the fevered environment of the front range: Boulder City near the mouth of Boulder Canyon, Colona (later La Porte) on the Cache La Poudre River, Fountain City near the mouth of Fountain Creek, Arapahoe City and Golden Gate in Clear Creek Canyon and El Paso near Pike's Peak. While the expectant prospectors settled in for the winter ahead in their tents and cabins, boomers were working the East and Midwest, touting the riches of the Pike's Peak region. The spring of 1859 saw an unprecedented rush across the plains to Colorado. Virtually all of the established trails - the Santa Fe, Oregon, Smoky Hill, Republican River and Overland - were crowded with westward-bound argonauts, and every means of conveyance - on horseback, with mule- and oxen-team, on overland stage and even on foot, pushing a cart or wheelbarrow - was used. Without doubt the two most eccentric rigs to attempt the crossing were the Wind Wagon, which was to rely on sails to propel it 100 miles a day, and a steam-powered wagon with 8-foot diameter wheels built by a man named Fortune; neither made it far before crashing.<sup>37</sup> It has been estimated that around 100,000 people set out for Colorado that spring, about half of which either gave up or died along the trails. Of the 50,000 which made the trip, probably half gave up soon after arriving at Cherry Creek and returned home.<sup>38</sup>

More gold was found in the creeks around Denver and deeper in the mountains. As prospectors continued to pour into the area, others - town promoters, merchants, bankers, saloon keepers, jewelers, gunsmiths, liverers, blacksmiths, hotel operators, druggists and a wide variety of tradesmen and camp followers - came with them. The boom towns required populations five times greater than the numbers of men actually working the mines. As the towns grew and settled into a sense of, if not permanency, than the assurance that they would still exist the next spring, they began to offer amenities such as substantial frame buildings, platted streets, plank sidewalks - and bridges.

The location of Auraria, Denver City and a third townsite named Highlands around the confluence of Cherry Creek with the South Platte River dictated that bridges be built to cross from one community to another. While officials of Auraria and Denver dickered over bridgebuilding, a charter was granted by the Kansas Territorial Legislature in February 1859 to some of the founders of Auraria to operate a ferry across the South Platte at the mouth of Cherry Creek.<sup>39</sup> The charter soon passed to Kentuckian Thomas Warren, who operated a rope ferry, consisting of a heavy rope tied to trees on either bank to which a flatboat was attached through a series of pulleys. Charging \$1 per wagon and team, Warren turned a handsome profit. The first bridge of record in Denver (and probably Colorado) appeared in the "Local News" section of the 8 June 1859 Rocky Mountain News: "Messrs. Smith, Chubbuck & Co. have recently completed a substantial bridge over the Platte at this place."<sup>40</sup> Smith et al. owned the "Pioneer Farm" across the river from which they planned to raise and sell produce. At the same time a bridge was under construction over Clear Creek, near Golden.

This first timber span was followed by two others early in 1860. In January, E. Karczewsky, an Iowan who was later a partner in Denver's first bakery, constructed a bridge across the Platte at Ferry Street (now 11th Street). And in April another bridge was built across the Platte from Auraria, at the west end of Larimer Street. According to Denver Historian Jerome Smiley, it was "not a very substantial affair, but the Auraria directors took it off the builder's hands, giving him 60 lots at \$10 each for it."<sup>41</sup> The first contracted bridge was to have been built by Thomas J. Bayaud late in 1859. In September he approached the Denver town managers with an offer to erect a bridge over the Platte, and the following month he was contracted to build it for \$2500. But problems arose, and when Bayaud had not yet begun the work the next spring because of financial disagreements, Sam Curtis, an old friend convinced him to continue. According to Curtis: "As I had again become connected with the Denver Town Company, I was on a committee to settle with T.J. Bayaud for building a bridge over the South Platte River at the foot of 15th Street. After many evenings, and drinking many of his whiskey punches, we finally reached a settlement."<sup>42</sup> Another bridge was apparently completed in 1860 over Cherry Creek at Larimer Street.

As Auraria was merged with Denver, the web of bridges over the river and the creek continued to grow, until a flood on 19 May 1864 washed them all away. Writes Historian Smiley:

From the beginning of things here in 1858 until May, 1864, historic Cherry Creek had been an inoffensive little stream in certain sections of the years, and an invisible one in the other seasons with its broad sandy bed, hot and dry. After midnight, the creek suddenly became an angry, roaring torrent that excercised its long reserved powers of devastation without warning. Wreckage piling against the creek bridges, low wooden affairs, had early in the proceedings loosened them from their bearings and away they had gone. The South Platte had risen to an unprecedeted stage, flooding far beyond its nominal limits, and it quickly demolished the bridge at the foot of 11th Street and another at the foot of 15th.<sup>43</sup>

Bayaud's 15th Street Bridge and Karczewsky's 11th Street Bridge were soon reconstructed with the others. And washed away again in July 1875. Rebuilt again, they were washed away again in May 1878. Again, Smiley:

The creek again asserted its destructive power by carrying out most of the bridges in its way and flooding the districts in the lower part of the city. Within two hours each bridge in the city was made a flooding dam and then successfully carried away. They were cheap wooden affairs with their supports in the creekbed, and were later replaced by properly constructed iron ones.<sup>44</sup>

By 1878, Colorado had been designated a state and Denver had grown to be a respectably sized city. The flimsily constructed wooden pile bridges began to give way to far more substantial iron (and later steel) trusses and stringers for the more heavily trafficked crossings of the Platte within

a couple of years after the 1878 flood. In 1887 the first of the great iron/steel viaducts was constructed over 23rd Street to connect Denver with property which was being boomed by the Denargo Land Company as industrial sites.<sup>45</sup> The following year the City of Denver contracted with the Missouri Valley Bridge and Iron Company of Leavenworth, Kansas, to erect a two-span steel truss over the Platte River at 19th Street. Costing a total of \$25,000, the 19th Street Bridge [DE01]\* replaced a ten-year-old timber structure built immediately after the 1878 flood. It is today the oldest original vehicular bridge still in use in Colorado. That same year the Denver Tramway Company was given a charter to operate cable cars within the city. Construction was soon begun on two multiple-span steel girder viaducts to elevate the company's cars over 16th and Larimer Streets. Completed in 1889, they were described by Smiley in 1901:

The Larimer Street Viaduct, beginning at 7th Street and by a sharp grade rising to the level of the tops of three story buildings, crossing streets, railroad tracks and the Platte River, is 3,600 feet long, constructed at a cost of about \$125,000. It is for cable car purposes only, but could be adapted to vehicle traffic and for foot travel. The 16th Street Viaduct, from Wazee Street near Union Station, crosses railway tracks and the Platte River to Platte Street in North Denver. It is 3,600 feet long and costs about \$180,00. It has a wide roadway with footwalks.<sup>46</sup>

In 1895 the Cities of Denver and Highlands formed the 14th Street Improvement District to raise money for the construction of the 14th Street Viaduct [DE07]\*. Construction was begun later that year by the Youngstown Bridge Company and finished in 1898 for an aggregate cost of \$367,068 - by far the most costly bridge in the state to date. With sixty-three spans totaling 1467 feet, it is the last of the original 19th century viaducts for wagons, trams and pedestrians remaining. In 1895 the City of Denver contracted again with the Youngstown Bridge Company to erect a wagon/tram bridge across Cherry Creek on Broadway. The Broadway Bridge [DE06]\* was completed the following year for a cost of \$29,500; it still remains in place today, essentially unaltered and under continuously heavy traffic.

As Denver grew and expanded, settlement throughout the rest of Colorado followed suit. The gold-hunting phalanx extended up the mountain valleys during the 1860s to form the mining towns of Black Hawk, Central City, Canon City, Aspen, Breckenridge, Georgetown, Idaho Springs and Silver Plume, among many others. Placer mining soon exhausted the easily gathered gold from the streams and sandbars and was being replaced by deep-rock mining, which required considerably greater manpower and equipment. It soon became apparent that more substantial transportation networks than the narrow, winding mountain trails were needed and that these networks should most likely be railroads. When Congress passed the Pacific Railway Act in July 1862 to charter the first transcontinental railroad, boosters in the Pike's Peak district were elated. This later turned to disappointment as the Union Pacific line was routed, not through Colorado but across the arid plains of Wyoming in 1867-68. Businessmen and miners in the territory immediately looked to

two railways for possible help: W.A.H. Loveland's Colorado Central, which would drop down south to Golden from the Union Pacific in Wyoming, and the Kansas Pacific, which would cross the plains west along the old Smoky Hill route to Denver. In late 1867, when the Kansas Pacific sputtered short of the territorial border out of money and the Colorado Central was having construction problems of its own, a third possibility - the Denver Pacific - was planned. Extending from the Union Pacific railhead at Cheyenne, it reached Denver in June 1870 - the first completed railroad in the state. Two months later, the Kansas Pacific, flush with cash from generous federal land grants, also reached Denver from the east. That year saw the formation of another railroad, Colorado's first narrow gauge line, which would later become inextricably associated with the state's development: General William J. Palmer's Denver and Rio Grande. Carl Ubbelohde describes the D&RG's first years:

Palmer planned and organized his road in 1870-71; actual construction got underway in the spring of 1871. By autumn of that year the road had built its narrow-gauge bed and laid its thirty-pound rails from Denver to the vicinity of Colorado City. There, through its subsidiary, the Colorado Springs Company, it laid out a new town - Colorado Springs - with full expectation that the choice location would make it a fashionable resort. The next year the Denver and Rio Grande constructed its line south along Fountain Creek until it reached a site across the Arkansas River from Pueblo. There another of its subsidiaries, the Central Colorado Improvement Company, established another town - South Pueblo. By the end of the year 1872, the road had also reached the coal field area near Florence, again establishing its own townsite of Labran. Two years later the Rio Grande's locomotives steamed into Canon City.<sup>47</sup>

By 1873 the Atchison, Topeka and Santa Fe had also reached within Colorado, extending its main line westward from Kansas as far as Granada. Following a two-year hiatus caused by the Panic of 1873, the line was continued to La Junta by December 1875 and to Pueblo the following March. The Kansas Pacific at the same time built a southern branch from its mainline, extending from Kit Carson to La Junta in 1875. In the twenty years between 1870 and 1890, the aggregate length of the rail lines operating in the state burgeoned from 157 miles to 4176.<sup>48</sup> In 1880 only two eastern trunk lines crossed the plains; that decade four more were laid: the Union Pacific, the Chicago, Burlington and Quincy, the Rock Island and the Missouri Pacific. As Palmer and the out-of-state magnates expanded their empires, new communities were formed and existing ones linked to the national arteries. The 1870s and 1880s were years of expansion and settlement along the rail companies' newly laid main lines and ancillary branches.

The railroads prompted tremendous economic growth in the state. Colorado's economy had by the 1880s diversified beyond the extraction of precious metals to include farming and ranching on the eastern plains and in the Grand Valley, coal mining in the south and milling and manufacturing in the front range cities. In 1860 the population for the Colorado portion of Kansas Territory was listed as 34,277 and consisted almost entirely of prospectors and camp

followers. That number increased only by about 5600 over the next decade, but with the coming of the railroads the 1870s marked a time of intense growth, as the state's population almost quadrupled to a total of 194,327. By 1890 the population was 413,249. Along with population and investment capital, the railroads brought technology and the means to transport it. Blast furnaces in Pueblo turned out the first steel west of the Missouri River in 1882 at the plant which ten years later would become the Colorado Fuel and Iron Works. In Denver companies such as Hendrie and Bolthoff and Mine and Smelter Supply began manufacturing and marketing mining and milling machinery. More to the point of this survey, the railroads brought the first substantial iron trusses into the state. While the primitive mountain and flatland roads could tolerate rickety timber bridges, the railroads could not and began erecting major spans in the 1870s. It would not be until a decade later that similar roadway bridges would begin to appear outside of the cities.

As speculatively developed towns sprang up along rivers, rail lines and almost everywhere else across the arid landscape, impromptu systems of overland roads began to develop to link them together. Road and bridge construction during the territorial and early state period was ostensibly the responsibility of the individual counties. Rarely following a premeditated plan, county commissioners would authorize the surveying and clearing of roads and construction of bridges as needed, usually in response to urgent local petitions. In the sparsely populated areas outside of the major cities, however, with minimal government revenues, relatively few vehicular bridges were erected before the 1890s and none remain today.

The counties' inability to keep up with the burgeoning demand for roads and bridges, especially in the difficult mountain terrain, led to the proliferation of privately operated toll roads and ferries. Uncle Dick Wootten is credited with opening the first toll road in the state.<sup>49</sup> After first obtaining charters from both Colorado and New Mexico, he built a route over Raton Pass which roughly followed the old Mountain Branch of the Santa Fe Trail. Others of varying length and quality were operated intermittently throughout the state, but no toll collector functioned on a scale to rival that of Otto Mears, the "Pathfinder of the San Juan." Beginning with a supply road from Saguache to Nathrop built in 1867, Mears amassed a network of wagon roads and narrow gauge railroads between the mining camps and towns of the San Juan Mountains, eventually controlling more than 383 miles of toll wagon roads. The most famous of Mears' roads was the route between Silverton and Ouray over Red Mountain Pass. Routed up the Uncompahgre River Canyon south of Ouray in 1878, the road was completed in 1883 after monumental cutting and filling through solid stone at the reported cost of \$40,000 per mile. Other early roads were built and maintained by the stage companies or by the mining communities which they served, but few were of more than minimal quality.

Ferries also profited at popular river crossings. Charging on average \$1.00 per wagon and team, they provided safer alternatives than fording to river crossings without bridges. Many later bridges were built at ferry sites. The Black Bridge [ME01]\* was built in 1891 at the primary ferry site over the Gunnison River for Grand Junction. Similarly the South Canon crossing of

the Colorado River to the Boston-Colorado Coal Company mines west of Glenwood Springs depended on a ferry for eleven years before the South Canon Bridge [GAD5]\* could be erected in 1914. Typically, intrastate travelers of the time had to rely on private ferries or bridges or simply encountered no bridges at all and were forced to ford the watercourses. Before 1890 the bridges that were put up at rural crossings were almost universally timber structures, either stringer bridges on piles or cribs or rudimentary king- and queenpost trusses in series. The Dotsero crossing of the Colorado River was one of the most important in the state, funneling most of the westbound traffic from Denver through Glenwood Canyon. But despite its pivotal position, the bridge which crossed it consisted of a line of log kingpost pony trusses until a two-span steel Pratt through [EA11] was erected in 1900. Often poorly constructed and unevenly maintained, these crude structures often washed out or collapsed under load.

It was not until about 1890 that any concerted bridgebuilding effort by the counties began to appear in the state. If the county seat was situated on a river, the first (and often the second) major bridge went up there. One of the first things that newly formed Morgan County did in 1889 was to move the Duell Bridge to the crossing just north of Ft. Morgan. It was later replaced by the Rainbow Arch Bridge [MR03]\*. Canon City, county seat for Fremont County, built its first major span over the Arkansas River in the center of town on 9th Street. It soon followed with a second truss, the Fourth Street Bridge [FRD1]\*. Similar scenarios occurred in La Junta, Lamar and Las Animas in the Arkansas River Valley in southeast Colorado.

Eventually bridgebuilding began to take on real importance at the end of the century. Colorado's population had climbed to 539,700 by 1900 and to over 700,000 ten years later. As steel trusses were more commonly put up at roadway crossings, the state's incipient bridge contracting industry began to grow. The emergence of the automobile at the turn of the century provided a tremendous impetus to county bridge programs. The first car, a Waverly electric, was reportedly introduced to Denver in 1899 by D.W. Brunton. The following year the first Locomobiles were sold in the city, and in 1903 the Denver Chapter of the Colorado Auto Club was founded. As people gained more mobility between towns which had previously been isolated and, perhaps more importantly as merchants began to gauge the value of the tourists that streamed into the region in autos and excursion buses, county commissioners felt increasing pressure from their constituents for more and better roads and bridges. The greater tax base from increased population allowed more ambitious bridgebuilding programs; the first decade of this century marked a dramatic increase of trussbuilding projects in the state. Pin-connected steel trusses such as the Rifle Bridge [GAD6]\*, the Elson Bridge [LS07]\* in Las Animas County, the Nepesta Bridge [PUD1]\* in Pueblo County, the Miner Street Bridge [CCD1]\* in Idaho Springs and the Baxterville Bridge [RG03]\* on the main road between Del Norte and Creede became commonplace products of county-funded programs.

To augment the counties' civil construction projects, the state legislature initiated the Internal Income Fund. Appropriations from this source amounted from a few thousand dollars in the first year to over \$340,000 in 1889.

Individual road, bridge and irrigation projects were selected for funding by the legislature each session from around the state. Ostensibly chosen on the basis of public need, the projects soon became enmeshed in partisan politics; the program eventually became alternately known as the "Pork Barrel Fund." Actual design and supervision of the construction projects was delegated to the State Engineer's office, also created in 1881. Eugene K. Stimson was appointed the first State Engineer in June, followed by twelve others by 1917.<sup>50</sup> The first bridge funded by the program was the Grand Junction Bridge over the Grand (Colorado) River in 1886; by 1908 over eighty other bridges had been appropriated for by the legislature. Typically, the State Engineer visited the proposed site to take soundings of the river bottom, consulted with the county commission and the county surveyor or engineer, prepared construction plans and specifications, let the project out for competitive bids, awarded the construction contract and supervised the work. Bridge designs from the office tended to be colorfully varied, as the engineers experimented with timber, steel and concrete configurations. If the cost of the bridge exceeded the state's appropriation, the county was required to make up the difference.

State Bridges, as they were called, were usually sited at rural crossings. Because they tended to be more substantial than their locally funded counterparts, they became heavily used as regionally important crossings and in some cases even created settlements. The third State Bridge [EA15]\* by the legislature was one over the Colorado River in 1889. Budgeted at \$6000, it was tentatively sited on the existing road at McCoy's Ferry. When the road was found unfit for heavy loads the site was moved seven miles upriver, and the adjacent counties built new roads to it. The construction contract was awarded in February 1890 to the Missouri Valley Bridge and Iron Company, low bidder among six respondents at \$5190. Using wrought iron and native timbers, the company completed a two-span Howe through truss in October. The bridge formed a pivotal crossing along the principal east-west route through the center of Colorado, and soon a small community named State Bridge grew around it. Other pivotal state bridges were the Fraker Ford Bridge [MF01] over the Yampa River, built in 1905; the Dotsero Bridge [EA11], built in 1900, the Fruita Bridge [ME10]\*; built in 1907 over the Colorado, the Saxton Bridge [DL07]\*, built over the Gunnison River in 1890 and the Hay's Ranch Bridge [RB03]\*, 1900.<sup>51</sup>

One outstanding State Bridge in southern Colorado was the Costilla Crossing Bridge [CN01]\*. Budgeted at \$10,000 in 1891, it was to serve as an important crossing over the Rio Grande between Conejos and Costilla counties. Rather than design the bridge as usual, the State Engineer solicited plans and specifications with the bids from bridge companies. The response was unprecedented: 38 proposals were received from almost all of the major national truss fabricators. In February 1892 the construction contract was awarded to the Wrought Iron Bridge Company for \$8400. Using wrought and cast iron and steel components, the contractor erected a two-span Thatcher through truss that year. The Thatcher design was an unusual one, and Wrought Iron was apparently the only firm to manufacture all-metal versions of it. As one of only three known Thatchers in the country, the Costilla Crossing is one of Colorado's most significant bridges.

For all the jockeying in the state legislature, state bridges were remarkably egalitarian in their distribution, and as a result the regions of the state outside of Denver and Pueblo advanced at similar rates in bridge construction. Among Colorado's counties, Garfield benefitted most from state-funded bridge construction under the State Engineer's office. State bridges were built at Glenwood Springs (1890), Balzac (1904), Silt (1908), Una (1910) and Lacy (1910 and 1912), totaling almost \$120,000 in erection costs. Of these only the Una Bridge [GA02]\* remains. It was funded jointly with the Lacy Bridge in 1910. The construction contract for the two was awarded in May to Denver-based Charles G. Sheely: \$24,000 for Una, \$23,750 for Lacy, and the bridges were completed later that year. High water the next spring heavily scoured the center piers of the two bridges. By mid-May the bridge at Una had settled dramatically, making it unsafe for travel; the Lacy Bridge collapsed completely, and although a new truss was put up in 1912, it stayed in litigation for years after. These two long-span trusses were among the last bridges designed by the State Engineer. Soon after the responsibility for trussed crossings fell under the jurisdiction of the newly created Highway Commission.

For counties contemplating construction of a major vehicular bridge the decision was a serious one. Strapped for funds, as most perennially were, counties could usually afford to fund no more than a half-dozen - and often only one - major truss per fiscal year. Costing several thousand dollars each, the bridges soon depleted road and bridge budgets. Among the more costly bridge projects in Colorado were the Rifle Bridge [GA06]\*, built in 1909 for \$26,872; the St. Charles Bridge [PU14]\*, built in 1924 for \$39,077, the Main Street Bridge [LS01]\*, built in Grand Junction in 1912 for \$67,215, the 14th Street Viaduct [DE07]\*, built in 1895-98 for a cost of \$367,068, and the 20th Street Viaduct [DE03]\*, Colorado's longest overhead structure, jointly funded by the City of Denver and several railroads for \$575,000. Frequently a county would issue certificates of indebtedness - official IOUs - when it had run out of cash. Or it would delay construction of bridge projects because all of the available funds for the year had been expended. When Mesa County found in 1911 that it could not afford both the Clifton [CR13]\* and Main Street [LS01]\* Bridges despite a special levy approved in 1909, it laid over the six-span Main Street Bridge, hoping for help from the state legislature, and contracted for the Clifton Bridge that year. The state funding did come through, and the Main Street Bridge was built the following year. Typically, payments to a bridge contractor were the largest line items in a county's expense record, approached in size only by payments to the local bank for retirement of bonds (which may have been issued to fund bridge construction).

Although competitive bidding for bridges was the norm, counties acquired bridges from other sources. One feature that the steel truss types shared, and which endeared them to the hearts of penurious county officials, was their versatility. Quickly erected, they could also be dismantled and moved if expedient. Many county bridges in Colorado had begun service as railroad spans, sold or given to the counties after they no longer were functional for the heavier railroad loads. The county bridges at Coaldale [FR15] and Cotopaxi [FR13] are both pinned Pratt through trusses acquired from the.

Denver and Rio Grande Railroad by Fremont County. Chaffee County acquired a more unusual railroad structure - a wrought iron narrow gauge turntable, fabricated in 1880 by the Edge Moor Bridge and Iron Company [CA05] - in 1954 for use on one of its secondary roads. In several instances not only the bridge but the entire right-of-way has been transferred from railway to roadway as entire lines are abandoned. In this way railroad history is mingled with roadway, and some of the state's most spectacular spans have been preserved. The Denver, South Park and Pacific narrow gauge railroad between Nathrop and the Alpine Tunnel was laid in 1880-81 and now serves as State Highway 162 / County Road 295A. Two important trusses have been left from the old line: the Morley Bridge [CA02]\*, a pin-connected Pratt deck truss which is the oldest intact bridge in Colorado, and the Hortense Bridge [CA12]\*, the oldest timber truss in the state. Two other abandoned railways have yielded the state's most striking trestles. The Florence and Cripple Creek Railroad was a narrow gauge line routed through Phantom Canon to the Victor/Cripple Creek gold district in 1894. It was converted to a county road after the closure of the railroad in 1912, leaving two early tunnels and a three-span steel trestle built in 1894 [FR48]\*. The Colorado Midland was a standard gauge line which was routed into Aspen in 1888. The Maroon Creek Bridge [PI07]\*, a 20-span high trestle just west of Aspen was built with the original line in 1888 and now is on State Highway 82.

Similarly early wagon trusses which had become unsuitable to handle increasing traffic could be moved to less-traveled crossings. The Fraker Ford Bridge [MF01] in Moffat County was erected in 1905 as a state bridge over the Yampa River. As traffic increased along the Midland Trail, it was replaced and moved to its present position over the Yampa at the resort camp of Juniper Hot Springs. A forlorn group of buildings clustered around a cracked concrete pool makes up the resort today, and both springs and bridge receive little traffic. Another state bridge which has been moved is the Saxton Bridge [DL07]\* in Delta County. In 1890 the legislature appropriated \$20,000 for its sixth wagon bridge - over the Gunnison River near Delta. The State Engineer contracted with the Bullen Bridge Company to erect an unequal-two-span Camelback through truss, and the bridge was completed that year. In 1908 local residents formed a co-op called the Union Bridge Company and contracted Bullen's son to move the trusses to another crossing of the Gunnison near Read. Around 1938 it was reportedly washed out, salvaged, dismantled and moved to its present location in sparsely traveled Escalante Canon.

As bridges became obsolete or too deteriorated to save, they were replaced. Sometimes the failure of the old span was more catastrophic, as was the situation with the Baxterville Bridge [RG03]\* in Rio Grande County. Two years after its 1909 construction, it collapsed under a cattle drive and was disassembled, repaired and reassembled in place. The predecessor to the Hardwick Bridge [GA03] was similarly damaged by a herd of cattle over it. Many of the bridges in the survey are replacement spans, sometimes built over the abutments of the previous bridge. The Swink Bridge [OT05]\* was erected in 1921 after the one before was washed away by the Arkansas

River. A two-span pinned Camelback through truss, it is placed on the steel tube foundations of the previous bridge, extended four feet vertically for greater clearance over the water. The 1921 truss is now itself scheduled for replacement. The Nyberg Bridge [PU05] is similarly built on the extended substructure of another truss which had washed away in the same 1921 flood. Most of the reinforced concrete arches in the survey have replaced timber or steel trusses. The F Street Bridge [CA07]\* in Salida, the Wolcott Bridge [EA14] in Eagle County and the Huerfano Bridge [PU19]\* are all replacement arches built by the Pueblo Bridge Company.

As counties searched for ways to fund bridges, some innovative financing arrangements have been made. For bridges in smaller cities, frequently the city and county jointly paid for the bridge, as was the case with the Commercial Street Bridge [LS20]\* in Trinidad and the Fifth Street Bridge [OT02] in La Junta. Bridges over rivers which formed the boundaries between counties were often jointly funded by the two counties, and the Baseline Bridges [AD01]\* and [AD02] between Adams and Weld Counties were paid for in 1926 using this arrangement. In the early years railroads erected vehicular bridges to throw open tracts of land for settlement, and private owners donated existing wood bridges to counties to have the adjoining roads designated county routes.

The decision to build a bridge usually would be made in the late spring or summer, after flooded rivers and creeks washed away existing timber spans, or in the late autumn, when riverbeds were dry and foundations and falsework could be constructed economically. The usual procedure was for the county clerk or surveyor to advertise for competitive bids, often giving only the location and span length of the proposed bridge and requiring the contractors to submit their own designs. For cities and counties with a population base to support a staff engineer, the designs were produced in-house and plans and specifications issued to competing bridge firms. After solicitation and receipt of the proposals, the construction contract was then awarded to the "lowest and best" bidder. Separate proposals for sub- and superstructure were often given, as were proposals for alternate designs. The Granite Bridge [CA01] was built from separate contracts for bridge and abutments. The tremendous urban viaducts in Denver and Pueblo often involved separate contracts for superstructure, substructure, decking, lighting, etc. When money and circumstances permitted, most or all of the bridges built by a county for the year were let out in a single bidding, and some of the bridges in the inventory come from multi-bridge contracts. The Paonia [DL02] and Hotchkiss [DL06]\* Bridges were contracted for in this fashion by Delta County in 1911, as were the Smith Hollow [OT03], the Timpas Creek [OT04] and the Dead Horse Creek [CR02] Bridges by Otero County in 1907.

A typical solicitation for bids in the local newspapers and professional engineering journals would be answered by a handful of national or regional bridge contractors, with an occasional local contractor submitting a proposal. The major steel foundries were in the steel towns of Illinois and Pennsylvania. These supplied steel truss components to bridge fabricators

Like Hansell-Elcock or the American Bridge Company of Chicago, the Omaha Structural Steel Works of Nebraska, Minneapolis Steel and Machinery Company of Minnesota, or the Denver-based Midwest Steel and Iron Works, which in turn marketed complete trusses to bridge companies which would assemble them. Many of the companies fielded local representatives in the state to keep up with upcoming city and county bridge projects. Among the national and regional firms which bid regularly on Colorado's bridges (with extant examples in the survey given in parentheses) were the Youngstown Bridge Company of Youngstown, Ohio (OE06\*; OE07\*; GA04\*); the Missouri Valley Bridge and Iron Company of Leavenworth, Kansas (DE01\*; AC01\*; GA05\*; OU01\*); the Wrought Iron Bridge Company of Canton, Ohio (CN01\*; R003\*); the Kansas City Bridge Company of Kansas City, Missouri (ME01\*); and the Marsh Bridge Company of Des Moines, Iowa (LS20\*).

Three major in-state bridge contractors were in constant competition for bridge work during the last years of the 19th and first three decades of the 20th centuries: M.J. Patterson, Charles G. Sheely and Joseph A. Bullen. Marcus J. Patterson was born in Chatham, Massachusetts on 8 July 1862. After graduating from the Worcester (Massachusetts) Polytechnic Institute in 1885, he worked as a bridge engineer first for the Chicago extension of the Santa Fe Railroad and then for the Edge Moor Bridge Company in Wilmington, Delaware.<sup>52</sup> In 1890 he moved to Denver as the local representative for the Lane Bridge Company of Chicago, and in 1895 he formed the M.J. Patterson Construction Company. In 1900 Patterson was joined by Karl Burghardt, a Minnesota-born engineer who had come to Denver that year after working for the mammoth Gillette-Herzog Iron Works of Minneapolis, the L. Schreiber & Sons Company of Cincinnati, and the Colorado Fuel and Iron Works of Pueblo.<sup>53</sup> Both men (the firm later became known as the Patterson-Burghardt Construction Company) designed as well as erected steel bridges, and the firm also contracted for steel construction for buildings, designing and erecting the steel framework for the Daniels and Fisher tower in Denver. W.F. Stone described the firm in his 1918 History of Colorado:

They rank with the most prominent in their line in the west, their operations exceeding in volume and importance those of a great majority of firms in the same line in the state. Progressive methods, keen business insight, close application and indefatigable energy on the part of Mr. Patterson have contributed largely to the result achieved.<sup>54</sup>

Among Patterson-Burghardt's more notable commissions were the Lacombe Building and the Metropolitan Building in Denver, the steel work for the state capitol and the City Park museum, as well as head frames for several Cripple Creek mines and numerous railroad and vehicular bridges, some of which are included in the survey: the Clifton Bridge CR13\*; the longest truss in Colorado, built in 1911, the Main Street Bridge LS01\*; an immense six-span truss erected in 1912 in Grand Junction and the Fruita Bridge ME10\*; erected over the Colorado River in 1907. Additionally Patterson designed and supervised construction of the Broadway Bridge OE06\* over Cherry Creek in Denver in 1895, one of his first Colorado commissions.

Like Patterson, Charles G. Sheely designed and erected steel bridges and

building superstructures from a Denver base. Not as much is known about his life, however.<sup>55</sup> Born in 1868, he formed the Charles G. Sheely Construction Company in Denver sometime around the turn of the century. General contractor for the Gas and Electric Building in Denver, he built with reinforced concrete as well as steel and contracted for the Halligan Dam as well as several road paving projects in Arapahoe and Weld Counties. Sheely, who lived in Bear Creek Canyon, also constructed the highway between Denver and Morrison. He died in 1934 of appendicitis in his winter home in San Antonio, Texas, and is buried in Ft. Collins. Several of Sheely's early spans still remain in use and are included in the survey; the Fraker Ford Bridge [MF01], erected in 1905 for the State Engineer, the Rifle Bridge [GA06]\*, a spectacular long-span truss erected in 1909, and the Una [GA02]\* and Lacy Bridges, built in 1911 over the Colorado River, are his most outstanding surviving steel bridges. These last two in Garfield County proved pivotal to Sheely's career, for it was their structural failures and the ensuing litigation that led to the reorganization of his firm into the Colorado Bridge and Construction Company. Colorado Bridge continued building concrete and steel roadway spans through the 1910s and 1920s. The last major bridge built by Sheely was the 1922 Ft. Morgan Bridge [MR03]\* over the South Platte River, reportedly the longest Marsh arch bridge in the world.

The third early Colorado-based company was the oldest and by far the most prolific, involving the careers of founder Joseph A. Bullen and three succeeding generations.<sup>56</sup> Bullen was born in Maine and first came west during the California Gold Rush of 1849. He returned to the East, moving to St. Paul, Minnesota, where he worked as a surveyor and construction supervisor. Around 1873 Bullen was employed as general superintendent of the Dallas and Wichita Railroad, but the Panic of 1873 forced the closure of the line after only forty miles of track had been laid. (The D&WRR was later reorganized into the Fort Worth and Denver, now the Burlington Northern.) After moving to Leavenworth, Kansas, he began building a few modest roadway bridges in the eastern part of the state in 1875, and as settlement expanded westward so did his business. In 1884 he formed the Bullen Bridge Company, marking an expansion into other states - including Colorado. In 1887 Bullen erected the first iron bridge in Pueblo and moved to that southern Colorado city five years later. From its Colorado base the company began constructing steel highway bridges throughout the West and Midwest. The Bullen Bridge Company built the first steel bridge over the Willamette River in Oregon in 1893; soon after a west coast office of the company was opened in Portland. Bullen continued building steel trusses throughout Colorado, and two of his earliest bridges - the Saxton Bridge [DL07]\* an early State Bridge over the Gunnison River in Delta County and the Fourth Street Bridge [FR01]\* in Canon City - are included in the survey.

After Joseph Bullen's death around 1900, control of the company was assumed by his son, Fredrick H. Bullen. Fred Bullen, as he signed his name, was born in 1867 in Leavenworth, Kansas, and had worked for his father designing and erecting steel trusses through the late 1880s and 1890s. One of the first things that he did was to change the name of the company to the Pueblo Bridge Company, naming himself as president and H.L. Hollister as secretary. Pueblo Bridge continued at the same pace as its predecessor, putting up steel trusses

at a prodigious rate across the West. Fred's son, named Joseph A. Bullen after his grandfather, was born in Pueblo in 1896, and like his father began working for the company. In 1913 the younger Bullen opened the Fountain Sand and Gravel Company at the same time the Pueblo Bridge Company was awarded the construction contract for a major three-span reinforced concrete bridge over the Arkansas River at Avondale [PU09]\*. Although the Bullens had built reinforced concrete arches using Daniel Luten's patented design as early as the 1907 F Street Bridge [CA07]\* in Salida and had consulted with the inventor himself in Pueblo, they were primarily steel trussbuilders. This new diversification marked the beginning of a profitable subsidiary branch for the company. While Fred dealt principally with the steel trusses, Joseph managed the construction of the arches, and the Pueblo Bridge Company was busier than ever during the 1910s. Both father and son frequently visited with city and county officials, consulting on bridge design and construction and praising the values of the Luten arch. As a result, many Luten examples, ranging in span from 54' [OT02] to 100' [RG08] and almost all constructed by Pueblo, are still functioning in the state. The Bullens' hold on bridge-building in Colorado was so absolute that in some regions of the state - primarily the south and the Arkansas River Valley - they were virtually the only contractors to put up major spans from 1890 through the 1910s. Fifty bridges built by the Bullens are included in the survey. Some of the more outstanding are the Prowers Bridge [BE01]\*, a multiple-span truss built in stages in 1902, 1906 and 1909, the Satank Bridge [GA01]\*, a timber Pratt through truss built in 1900, the Nepesta Bridge [PU01]\*, a two-span steel truss built in 1905, the Nicholson Bridge [PU08], a three-span Luten arch put up in 1923, and the Huerfano Bridge [PU19]\*, a five-span Luten arch built in 1921.

As the composition of the industry began to change in the late 1920s, bridge design was no longer the exclusive province of the bridge companies. Sheely, Patterson and the Bullens found it increasingly difficult to compete with the new group of road and bridge contractors which appeared in the early 1930s. The last bridge built by the Pueblo Bridge Company was an open-spandrel concrete arch [EP13]\* west of Manitou Springs, contracted for by the State Highway Department. The reason for the industry-wide change lay with a fundamental restructuring of the bridge contracting process. As bridgebuilding passed more to state and federal levels, the need for design/build firms like the Pueblo Bridge Company dramatically diminished. This marks the most recent chapter in the story.<sup>57</sup>

#### COLORADO DEPARTMENT OF HIGHWAYS

As early as 1906 a state highway system was being plotted by a group of county commissioners which hoped to coordinate the Internal Income Fund. The following year the Colorado State Association of County Commissioners was formally organized. In 1905 the first statewide Good Roads Convention had been held. In 1902 the Colorado Auto Club had first been formed in Denver. All of this activity served to point out the growing role of automobile transportation and the need within Colorado for a well-maintained highway system. At the 1906 convention of the Good Roads Association a bill was presented to

to the legislature which would create a state highway commission. It did not make it far. The 1907 legislature was even less receptive. In 1908 the Good Roads Association, Colorado Auto Club and the Rocky Mountain Highway Association combined lobbying efforts, and the following year enabling legislation for the State Highway Commission was passed. The bill provided for a three-member commission, a secretary-engineer and a stenographer. James E. Maloney was appointed the first engineer by the governor.

According to Wiley in The High Road:

Starting from scratch, the commission had a terrific task in setting up a working relationship with the counties and establishing some coordinated system of highways. Counties were asked to submit maps showing roads within their boundaries and to indicate those most heavily travelled. Many counties didn't have any maps; so surveys were necessary. However, 33 counties did send in maps that first year, and the commission established the first system of state primary roads covering 1,643.5 miles. The commissioners made it a practice never to accept a road on the state system unless they drove over it and made a personal inspection of the general route.

The first three commissions took up the task of building short-span concrete bridges and left the truss design to the State Engineer's office, which had managed the state's trussbuilding since 1886. In 1913 the commission funded its first steel trusses, the designs of which were left to the bridge companies. Of these the Lado Del Rio Bridge [AC01]\* is the earliest traceable example. The commission was at first poorly funded, and it was not until intense lobbying from the Good Roads Association turned the legislature around that budgets began to allow much activity. In 1913 the Highway Act was passed; this created the position of highway commissioner and a five-person advisory board. Funding was changed from 33-66 match with the counties to 50-50.

The system was again changed after the passage in Washington of the 1916 Federal Highways Act. In order to meet minimum requirements, the state legislature passed the 1917 Highway Act reorganizing the Highway Commission into the State Highway Department. At the same time the State Highway Fund was created to provide a framework within which state and federal aid funds could be distributed. In December of that year the first six Federal Aid Projects were scheduled. None were for bridges. As the Highway Department underwent changes in organization and personnel, it began erecting steel and concrete bridges. Standard plans were developed for different spans of bridges. The Department, like the counties earlier, stayed with a few well-used designs. Favoring the standard over the exotic, it generally used riveted Camelback pony trusses for spans 125' and under and riveted Parker through trusses for crossings requiring longer spans. Other types of trusses such as the Pratt and Pennsylvania throughs were experimented with in the 1920s but were not used in the decades to follow. The advent of World War II generally meant the end of trussbuilding in Colorado. Although a few continued to be built, more modern concrete and steel beam designs were receiving greater use. As county roads were widened and paved for state highways and 19th century pin-connected trusses were replaced with highway girders, the makeup of the state's road systems began to change. But enough historic bridges have survived to form a tangible record of history.

## BRIDGE TYPES

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Throughout the array of bridge configurations represented in this survey, a number of technological trends begin to emerge. The steel trusses comprise by far the largest group of structures, steel girders, second, and reinforced concrete arches, third. Like thousands of contemporary bridges built across the country, Colorado's early trusses were primarily of two types: the Pratt (with its many permutations of form) and the Warren. Both through and pony trusses were erected in abundance, the size and configuration of their chords, struts, posts and bracing determined by the loading conditions and span length. These bridges seldom displayed anything other than standard form. The highly competitive bidding process and the fact that most of the spans required were relatively short did little to encourage engineering innovation in the bridges' design. Most steel vehicular trusses in Colorado were fabricated from standardized designs, mass-produced by the great Midwestern bridge companies. For vehicular trusses in Colorado, the shift from pinned connections to riveted occurred about 1911. Large through trusses were continued to be erected with pinned connections after this time, up to 1929 with the Purgatoire Canon Bridge [LS08], but they represented an earlier and obsolete technology. A brief description of most of the significant bridge types will help to delineate the resources included in the survey.

The most common through truss type in Colorado was the Pratt. Patented in 1844 by Thomas and Caleb Pratt, it later became the bridge of choice for medium-span vehicular crossings. The pin-connected steel Pratt through was the most commonly constructed truss type of the 1890s and early 1900s. As its technological successor the riveted Pratt was not as popular, but was still considered a standard configuration. Thirty-five steel Pratt throughs are found in the survey - 22 pinned and 13 riveted. Ranging from 85' to 217' in span length, they constitute the most numerous through truss type and number among the oldest roadway bridges in Colorado; thirteen bridges from this configuration were determined potentially eligible by the Board. The oldest - the 19th Street Bridge in Denver [DE01]\*, erected in 1888 by the Missouri Valley Bridge Company - is also the oldest original vehicular bridge in the state, and three other outstanding 19th century examples - the Fourth Street Bridge [FR01]\* in Canon City, built in 1891 by the Bullen Bridge Company, the Roan Creek Bridge [GA04], 1897 by the Youngstown Bridge Company, and the spectacular long-span Black Bridge [ME01]\*, built in 1891 by the Kansas City Bridge and Iron Company - have been included. Two excellent well-preserved early 20th century examples have similarly been included: the Four Mile Bridge [RO03]\*, 1900 by the Wrought Iron Bridge Company, and the Elson Bridge [LS07]\*, 1905 by the Pueblo Bridge Company. The Fraker Ford Bridge [MF01], 1906 by Charles G. Sheely, Nepesta Bridge [PU01]\* and the Powers Bridge [BE01]\*, both by the Pueblo Bridge Company, Linden Street Bridge [LR01], 1902 by W.H. Roller, and the State Bridge [RG04]\*, 1907 by the Denver Bridge Company, are all multiple-span examples, the first three with tandem through trusses and the latter two unusually combined with pony truss approaches. The only skewed pin-connected through truss, the Masonic Park Bridge [RG03]\* is a Pratt through, and the latest pinned truss, the Purgatoire Canon Bridge [LS08] is also a Pratt. Two rigid-connected examples are included: the Sheely Bridge [PI08]\* and the County Fairgrounds Bridge [LR18] and one which displays elements of both pin and riveted construction. Finally one timber Pratt through found in the

survey, the Satank Bridge [GA01]\*, 1900 by the Pueblo Bridge Company, is included.

For shorter span ranges, Pratt pony trusses were used extensively for vehicular bridges during the late 19th and early 20th centuries. These featured similar compression-tension configurations as the Pratt throughs but had lower web heights and lacked overhead struts and braces. The most common type of truss in Colorado, with a total of 109 still in public use, most of the Pratt ponies are rigid-connected, erected after 1915. Fifteen pinned examples still exist; from these three were determined potentially eligible. The oldest Pratt pony in the survey is the Dexter Creek Bridge [OU01], erected originally in 1899 by the Missouri Valley Bridge and Iron Company. Other significant early examples are the Bachelor Switch Bridge [OU02]\*, 1900 by the Pueblo Bridge Company; the Miner Street Bridge [CC01]\*, the only skewed, pin-connected pony truss; the Dead Horse Creek Bridge [CR02], the only twin-span pinned pony truss; and the Hay's Ranch Bridge [RB03]\*, rare Pratt variant with bowed top chord. The earliest dateable riveted Pratt pony - the Granite Bridge [CA01]\* - has also been included, as has the only hybrid design - the First Street Bridge [LR04] in Loveland.

Much more uncommon is the Pratt deck truss, designed with the superstructure entirely beneath the roadway. Associated principally with highway construction of the 1920s and 1930s, it is a configuration which also has been used widely for railroad crossings. One of each has been singled out from the survey. The Morley Bridge [CA02]\* is a pinned Pratt deck erected in 1881 by the Denver, South Park and Pacific Railroad; it is the oldest intact bridge known in Colorado. The Arkansas River Bridge [CA10]\* is the longest, highest and only skewed example of the riveted Pratt decks in the survey. Even more rare is an odd subtype called the Pratt semi-deck, a truss configuration featuring floor beams which are joined midway on the web, rather than to the bottom (pony) or top (deck) chords. With the 1983 destruction of the Wilmot Ranch Bridge in Eagle County, only one semi-deck truss remains in public use in Colorado: the Portland Bridge [FR52]\*, erected in 1926 by H.M. Fox.

Pratt through trusses with straight top chords were overshadowed on longer spans by the polygonal chorded Pratt variations - the Parker, Camelback and Pennsylvania trusses. These graceful long-span bridges combined the compression-tension web members of the standard Pratt with multi-faceted top chords. The long spans and attenuated members, however, have made these types principal targets for bridge replacement programs, as they have been rendered functionally obsolete by today's heavier loading requirements. Consequently, few early pin-connected Parker and Camelback throughs remain on the county road systems, and all but one of them in Colorado are in some way endangered. Four pinned Camelback throughs are found in the survey and all were determined eligible: the Prowers Bridge [BE01]\*, 1909; Escalante Canon Bridge [OL07]\*, 1890; Hotchkiss Bridge [DL06]\*, 1911; and the Swink Bridge [OT05]\*, 1921 - all erected by the Pueblo Bridge Company. The two pinned Parker throughs remaining have also been selected: the Fruita Bridge [ME10]\*, 1907 by M.J. Patterson, and the Rifle Bridge [GA06]\*, 1909 by Charles G. Sheely.

As the next generation from the pinned Parker through, the riveted Parker was

similarly used in long-span applications. During the 1920s and 1930s the Colorado Department of Highways used the riveted Parker as the standard design for medium- to long-span highway crossings, and many were erected across the state. The earliest of these - the Nyberg Bridge [PU05], built in 1922 by Karl Burghardt - spans the Arkansas River. Determined eligible are two multiple-span examples: the Delta Bridge [DL08]\*, built in 1923 by Winterburn and Lumsden, and the Fifth Street Bridge [ME09]\*, in Grand Junction, 1933 by the Wisconsin Bridge Company.

For vehicular spans in the 80'-125' range two early 20th century alternatives to the parallel-chorded Pratt pony truss were the riveted Camelback or Parker pony trusses. With 90 examples in the survey, the Camelback is the second most prolific truss type in Colorado, and has been used as a standard design both by the counties and the Department of Highways. One Camelback pony - the earliest dateable, Fort Lyon Canal Bridge [OT10] - and one Parker pony - the Slate Creek Bridge [SU01]\* - have been included.

A notable subtype of the Parker truss design is the Pennsylvania truss, named after the Pennsylvania Railroad which used it extensively. With diagonals braced by sub-struts or sub-ties, the Pennsylvania represents a strengthening of the basic Parker configuration. It has been used primarily as a railroad bridge, with somewhat less usage as a vehicular truss. Two pin-connected Pennsylvanias remain in Colorado; both are now closed to vehicular traffic and face uncertain futures. The longer and older of the two is the Rifle Bridge [GA06]\*, erected in 1909 by Charles G. Sheely. The other is the South Canon Bridge [GA05]\*, erected in 1914. Riveted Pennsylvanias were used sparingly on the county and state road systems, and the oldest examples are included for potential eligibility: the Manzanola Bridge [CR13]\*, the longest truss in the state, and the Linden Avenue Bridge [LS01]\*, comprised of two spans from a six-span set.

Another basic truss configuration which has received moderate use on Colorado's roads from the 1900s to the 1930s is the Warren truss. Patented by two British engineers four years after the Pratt truss, the Warrens were not as extensively used as the Pratts for vehicular spans in the state. Like the Pratt design, several variations on the basic Warren configuration, all rigid-connected, can be found among the surveyed bridges. The "pure" Warren truss featured a fairly straightforward design which transferred loads through triangulation of its members, with no verticals and diagonals alternating between tension and compression. Variations feature bridges with verticals at all and at alternating panel points, bridges with polygonal top chords and those with polygonal chords and verticals. Twenty-five parallel-chorded ponies are found in the survey; 6 polygonal. Four Warren representatives were found eligible. By far the oldest is the Amity Canal Bridge [PR05], a pinned iron Warren pony with a straightforward web arrangement. Truly an old bridge, perhaps the oldest superstructure in the state, it has been salvaged from a railroad for roadway use. Other outstanding Warrens are the Baseline Bridge [AD01]\*, the only multiple-span Warren; the Roubideau Bridge [DL01]\*, an uncommon through truss design with polygonal top chord; the Una Bridge [GA02]\*; another unusual through truss, the double-intersected Warren; and the Howard Bridge [FR22]\*, a pony truss with a polygonal top chord.

Once away from these mainstream groups, truss taxonomy tends to become a bit obscure. Several singular bridges are found in the survey - either the last of their types or unique examples in the state. Timber Howe trusses were once commonplace before the availability of inexpensive steel. Two Howes - a through and a pony - are included for possible eligibility: the State Bridge [EA15]\*, built in 1890, and the Wheeler Bridge [RG07]\*, built in 1924. Similarly, Queenposts were among the most common of Colorado's early timber frontier spans. One modified timber/iron Queenpost in the survey has been salvaged in-place from the Denver, South Park and Pacific Railroad. The Hortense Bridge [CA12]\* was originally built in 1880 and is the oldest timber structure in the survey. Ranging more toward the esoteric are three trusses included here: the Costilla Crossing Bridge [CN01]\*, a rare iron/steel truss type built in 1892; the Avery Bridges [LS06]\* and [LS09]\*, twin Avery trusses erected in 1914; and the Four Mile Bridge [CA09]\*, a truss leg bedstead built in 1909.

Steel girders constitute the second most populous vehicular bridge group in Colorado. Most are built-up plate girders, either through or deck, which are comprised of rolled steel plates with angle flanges and web stiffeners. Easily fabricated and installed by force account labor, girders were seldom mentioned in the government records of counties and cities. Consequently, very few in the survey are traceable, limiting their interpretive value. Two outstanding multiple-span examples were actually narrow gauge bridges which have been converted in-place following the collapses of their rail lines. These are the Maroon Creek Bridge [PI07]\*, built in 1888 by the Colorado Midland Railroad, and the Adelaide Bridge [FR48]\* in Phantom Canon, built in 1894 by the Florence and Cripple Creek Railroad. The other significant girders are all found in Denver, where all but one are parts of large multi-span viaducts. These are the 14th Street Viaduct [DE07]\*, built in 1898 by the Youngstown Bridge Company, the 20th Street Viaduct [DE03]\*, built in 1909 by the Milwaukee Bridge Company, and the Broadway Bridge [DE06]\*, an extraordinary open-web girder built in 1895.

The popularity of reinforced concrete deck arches, and more specifically Luten arches, is directly attributable to Fred and Joseph Bullen. All but three of the 17 Luten arches in the survey were built between 1907 and 1923 by the Bullens' Pueblo Bridge Company. Several of the more outstanding Lutens in the survey are: the F Street Bridge [CA07]\* in Salida, the 17th Street Bridge [B001] in Boulder, the Commercial Street Bridge [LS20]\* in Trinidad, the Wolcott Bridge [EA14], the Nicholson Bridge [PU08], the Avondale Bridge [PU09]\*; the St. Charles Bridge [PU14]\*; and the Huerfano Bridge [PU19]\*. Patented in 1904 by Daniel Luten, the Luten arch presented an innovative use of reinforced concrete. Another innovative concrete bridge type was the Marsh arch, named after its inventor James Marsh. Only one Marsh arch is known to have been built in Colorado - the Ft. Morgan Bridge [MR03]\*; it was found eligible. Colorado does not have any truly outstanding open-spandrel concrete deck arches, but the two better examples are the Bannock Street Bridge [DE24] in Denver and the San Luis Bridge [CS01]\* in Costilla County. Finally, the best example of a non-Luten filled arch in the survey is the Apishapa Bridge [OT07]. The trusses, girders and arches comprise over 95% of the bridges in the survey.

EPILOG

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The many thousand metal bridges throughout the country are of the same character. In almost all such cases there was and is no thought of architecture, or of durability, or of pride in the art. In the fierce commercial competition, the most naked utilitarian considerations are allowed to govern the design of such structures.<sup>59</sup>

This pragmatic attitude, observed by Scientific American.in 1921, still prevails today. Superseded by more sophisticated engineering designs - box beams, prestressed concrete girders, twin Ts - most of the historic bridges in the inventory are now anachronisms, types of which are seldom still built. The last Luten arch in the survey [PU14]\* was built in 1924, the last pin-connected truss [LS08] in 1929. The remaining highway and roadway arches and trusses are just that: remainders of past technologies, whose numbers are continually dwindling through attrition. Two major trends are occurring today which are frequently at loggerheads - replacement and preservation.

Since 1978 federal funding for bridge replacement has increased dramatically in an effort to bolster what has been termed America's crumbling infrastructure. Of the approximately 570,000 bridges on the federal aid and other highway systems across the country, 75% were built before 1935 and almost half, or nearly a quarter million, are eligible for replacement under the National Highway Bridge Replacement and Rehabilitation Program (H8RRP).<sup>60</sup> Underdesigned for contemporary vehicle loads, usually too narrow for the traffic volume, poorly maintained, aging and frequently damaged by collision, many of the off-system bridges have woefully low sufficiency ratings and cannot meet minimum highway standards without extensive rehabilitation. Given the choice between rehabilitating existing bridges or replacing them with new spans, the overwhelming majority of instances has tipped toward replacement. Replacement of aging bridges is itself an historic phenomenon, and many of the bridges in this inventory are replacement structures, built over the abutments of previous, older spans. The difference today is the pace at which bridge demolition is proceeding and, more significantly, the value now placed on preservation of earlier bridge types.

Colorado fits within the mainstream of vehicular bridge attrition. The 544 bridges included in this survey represent a fraction of the total number of structures put up before 1945 and only a handful of the truly amazing spans which have once stood in the state. Those which remain have generally been built or subsequently moved to relatively lightly used crossings and posted with diminished load limits. The majority, through design obsolescence or damage that is sudden (flooding, collision, collapse) or protracted (deterioration, foundation settlement), that could not be economically rehabilitated or moved have been demolished. Reinforced concrete and stone masonry bridges, with high inherent strength and minor deterioration, have generally weathered well; few seem endangered at this point. The historic bridge type with the most uncertain future is the timber or metal truss. Comprising approximately

60% of the bridges in the survey and almost 70% of the potentially eligible bridges, the trusses have experienced a tremendous attrition, both historically and recently.

Take for example the polygonal-chorded Pratt subtypes: pin-connected Parker, Camelback and Pennsylvania throughs. Picturesque long-span trusses, they are among the most visually striking of the historic bridge configurations. But it is exactly those characteristics which endear them to the hearts of preservationists - early erection dates, pinned connections, long spans and attenuated, often rusted, members - that target them for replacement. With notoriously low sufficiency ratings, most have been replaced; of the eight found in the inventory, all but two have troubled futures. The Silt Bridge [GA07] has been demolished. The Swink Bridge [OT05]\* has been determined eligible for the Register in anticipation of its removal within the year. Replacement truss steel for the Escalante Canon Bridge [DL07]\* is on-site now, while the county waits for more money to complete the project. The South Canon Bridge [GA05]\* is now closed to vehicular traffic, and the county has reportedly tried to sell the superstructure for salvage. The Fruita Bridge [ME10]\* is abandoned and partially fire-damaged. The Rifle Bridge [GA06]\* has also been closed to vehicles and now functions as a pedestrian crossing. Its situation on a tight bend of the Colorado River assures that substructure maintenance will be a recurring problem, which will eventually prove prohibitively expensive. Only the Prowers Bridge [BE01]\* and the Hotchkiss Bridge [DL06]\* are not immediately endangered.

Other significant early bridges are also threatened. The Black Bridge [ME01]\* in Grand Junction and the Fourth Street Bridge [FR01]\* in Canon City are both now closed, and several bridges which are still carrying traffic are being considered for replacement: the Costilla Crossing Bridge [CN01], \*Four Mile Bridge [CA09], \*19th Street Bridge [DE01]\*, Baseline Bridge [A001]\*, 17th Street Bridge [B001] and the Idledale Bridge [JE02], among others. The Linden Street Bridge in Fort Collins [LR01] has been funded for replacement. The DeBeque Bridge, a spectacular truss erected in 1892, has been removed sometime in the last few years. And finally the State Bridge [AL01] in Alamosa and the Wilmot Ranch Bridge [EA02], both unusual truss types, have been demolished within the last year or so. During the course of the survey 19 bridges have been discovered removed. As counties receive HBRRP funds, more historic structures will fall under the gun.

Paralleling (and sometimes intersecting) this trend is one toward awareness among historians and preservationists of the historic, technological and aesthetic values of archaic bridge forms. This is evident in the proliferation of bridge inventories like Colorado's in other states and the concomitant amount of mitigation associated with construction projects which affect significant bridges. As the awareness has increased and the available data pool becomes clearer, individual preservation efforts have also begun to show successful results. It is symptomatic that the failures outnumber the success, but a number of trusses and arches in the country have been rehabilitated by their government administrators in recent years, not as museum pieces but as working components of the transportation system. The Miner Street Bridge [CC01]\* in Idaho Springs has recently undergone work

to restore it and prolong its function as the city-center crossing of Clear Creek. Other bridges such as the Hay's Ranch Bridge [RB03]\* and the Dexter Creek Bridge [OU01] have had supplemental supports inserted beneath the floor beams for rehabilitation. Cases of adaptive reuse have also increased in the country. The Sheely Bridge in Aspen [PI08]\* is a successful Colorado example: moved from Carbondale, it now serves as a pedestrian crossing over the Roaring Fork and a rest and meditation stop in Mill Street Park.

This inventory is intended to serve as the first step to identify and preserve the state's most significant vehicular bridges. Their preservation, or at least adequate documentation prior to demolition, should be an ongoing objective. Anachronisms perhaps, but these bridges are visually fascinating artifacts which provide unreplicable insights into the development of bridge technology and the evolution of a part of Colorado's history.

#### FOOTNOTES

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- 4 Llewellyn Nathaniel Edwards, A Record of History and Evolution of Early American Bridges (Orono, Maine: University Press, 1959), page 24.
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- 6 J.A.L. Waddell, Bridge Engineering (London: John Wiley and Sons, Inc., 1916), page 9.
- 7 Van Arsdall, "A Brief History of Bridge Building," page 5.
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- 10 Joseph Gies, Bridges and Men (Garden City, New York: Doubleday and Company, Inc., 1963), pages 102-03.
- 11 Plowden, Bridges: The Spans of North America, page 35.
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- 18 Gies, Bridges and Men, page 130. "This book had been published three or four years when Hermann Haupt wrote his work on bridges. Apparently, Mr. Haupt had never seen a copy of it, since he claims his work as original also, and there is no internal evidence that he had seen Whipple's book. His methods of analysis are much cruder than Mr. Whipple's and far less complete." L.B. Johnson, C.W. Bryan and F.E. Turnegure, The Theory and Practice of Modern Framed Structures. Third Edition (New York: John Wiley and Sons, Inc., 1926), page 12.
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- 21 Van Arsdall, "A Brief History of Bridge Building," page 4.
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- 23 Waddell, "Simple Truss Bridges," The American City, Vol. XVI, Number 2 (February 1917), page 120.
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- 32 "State Bridge Inspection in New York," Engineering News, 30 April 1887, page 285.
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- 34 Carl Ubbelohde, Maxine Benson and Duane A. Smith, ed. A Colorado History, Boulder: Pruett Publishing Company, 1972), page 32.
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- 39 Dan Hopkins, "Troubled Bridges over Denver's Waters," Rocky Mountain Motorist, May 1982, page 12.
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- 41 Jerome Smiley, History of Denver (Denver: Denver Times Publishing Co., 1901).
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- 49 Bartlett, "The History of Road Building in Colorado," page 5.
- 50 The State Engineers were:

Eugene K. Stimson	1881-1883
Edwin S. Nettleton	1883-1887
J. Sire Greene	1887-1889
James P. Maxwell	1889-1893
Charles B. Cramer	1893-1895
Horace A. Sumner	1895-1897
John E. Field	1897-1899
Addison J. McCune	1899-1903
Louis G. Carpenter	1903-1905
Thomas W. Jaycox	1905-1909
Charles W. Comstock	1909-1913
John E. Field	1913-1915
Adelbert A. Weinland	1915-1917

18th Biennial Report of the State Engineer: Colorado 1915-16, Denver:  
Eames Brothers, 1916.

51 The remaining state bridges found in the survey are:

CA01	Granite Bridge	1911	Pueblo Bridge Company
CA06	Brown's Canon Bridge	1908	Pueblo Bridge Company
CN01	Costilla Crossing Br.	1892	Wrought Iron Bridge Company
CN07	Capulin Bridge	1908	Walter Sharp Bridge Company
CS01	San Luis Bridge	1911	M.F. Levy Construction Company
DL01	Roubideau Bridge	1911	Pueblo Bridge Company
DL07	Saxton Bridge	1890	Bullen Bridge Company
EA11	Dotsero Bridge	1900	Pueblo Bridge Company
EA15	State Bridge	1890	Missouri Valley Bridge and Iron Co.
GA02	Una Bridge	1910	Charles G. Sheely Construction Co.
ME10	Fruita Bridge	1907	M.J. Patterson Construction Company
MF01	Fraker Ford Bridge	1906	Charles G. Sheely Construction Co.
RB03	Hay's Ranch Bridge	1900	M.J. Patterson Construction Company

- 52 All biographical information for Patterson is from: Wilbur Fiske Stone History of Colorado, Vol. II (Chicago: The S.J. Clarke Publishing Company, 1918), pages 651-52.
- 53 Ibid., pages 468-469.
- 54 Ibid., page 651.
- 55 What little is known comes from Sheely's obituary: "Charles G. Sheely, Contractor, Dies," Denver Post, 18 December 1934, page 8.
- 56 Biographical information on the Bullen family is from an oral interview with Joseph A. Bullen, Jr., Pueblo Colorado.
- 57 As a postscript to the Bullen family story, Joseph A. Bullen, the great-grandson of the company's founder, opened a prestressed concrete plant in 1960 to manufacture heavy twin-T concrete bridge and roof girders. Called Prestressed Concrete of Colorado, it was sold in 1966 and now operates as Stanley Structures.
- 58 Marion C. Wiley, ed. The High Road, page 11.
- 59 Plowden, Bridges: The Spans of North America, page 296.
- 60 William P. Chamberlin, Historic Bridges - Criteria for Decision Making (Washington: Transportation Research Board, 1983), page 3.

# EVALUATION

## SECTION THREE

The central feature of the bridge survey is the evaluation of the individual bridges and tunnels. Within the context of the bridgebuilding overview, each

- structure from the inventory was assessed for historical and/or technological significance for its representation of bridge industry trends. Because the survey is intended as a cultural resource management document to be used in processes (bridge replacement and rehabilitation) which have federal involvement from the Federal Highway Administration, significance is therefore gauged by eligibility for the National Register. Its evaluation is guided generally by the criteria outlined in 36 CFR Part 1202. These criteria have been written in purposefully vague terms, favoring the general over the specific, because they are aimed toward a broad range of sites and situations. Basically, each structure has been evaluated in two respects:

Significance - which may be regional, statewide or national in scope and which may be derived from the bridge's association with an historically important event or personnage, its embodiment of the distinctive characteristics of a type, period or method of construction or its yield of important historical information.

Integrity - specifically, integrity of location, design, setting, material, workmanship, feeling and association.

With three exceptions (the Fort Morgan Bridge, MR03; Costilla Crossing Bridge, CN01; and the Royal Gorge Bridge, FR58), none of the spans included in the inventory displays the engineering or historical significance to make it nationally important. Rather, the bridges generally exhibit the standard configurations of the thousands of mass-produced trusses or job-built arches erected from the standard plans of the great midwestern bridge companies (and later the State Highway Department). Cases for significance are, more often than not, based upon the structures' representation of particular designs in the state, whether as the best examples of their types from relatively large groups or as the only surviving examples of specific configurations. With many early but few truly nationally outstanding bridges encountered in the inventory, the intent of the evaluation for significance is to select the best representative examples from each major grouping (Pratt through trusses, for instance), along with notable deviations from standard form, and tie these together with the history of bridge building in Colorado. The result is a group of structures which, preserved and interpreted, forms the tangible basis for the telling of part of the state's history.

To aid with the assessment a numerical rating system has been developed. Patterned after the previously developed systems of Virginia, Georgia and Ohio, it assigns numerical values to the different aspects of significance as defined by the National Register. Working closely with CDH staff, Fraserdesign formed the

rating system, which has been tested and fine-tuned throughout the course of the inventory. The rating divides into three essentially equal categories: level of documentation, technological significance and general significance. The first is documentation. With a maximum of 30 points assigned, it is considered to be an important quality, allowing the structure to be traced to a specific time, builder and place of origin. Documentation requires hard evidence in the form of primary source references to the bridge's or tunnel's construction or physical evidence, the most obvious form of which would be a builder's plate. Construction dates for bridges not definitively documented have been estimated from CDH files or comparison with similar documentable spans; bridgebuilders have not been guessed at on the basis of construction style or technique - only those known from the records have been listed. The components of documentation are construction date and builder, and assessment is biased toward older bridges and those erected by in-state bridgebuilders. When the construction data has been estimated one-half the value is given; for significant later examples of type, five points have been added. No points are given to bridges for which the builder is unknown. Compilation of a list of documented structures forms a bridge chronology in the state, from which individual bridges may be evaluated and, if undocumented in this survey, perhaps documented with future research. Because of this, a premium is placed on traceability of the bridges' origins, and few untraceable spans are included among the potentially eligible.

The second category is technological significance, with a maximum of 35 points assigned. In this, rarity of structural type, dimensions and detailing are considered. Multiple spans are given points as unusual applications of engineering achievement and community investment. Similarly, span length is considered, with the longest spans of like bridges given preference as usually the most important investments from the communities which they serve and to a lesser extent as indicators of higher technology. One of the most important considerations for evaluation is the number of surviving examples of type in the state. On the assumption that rarity equates with significance, more points are assigned for unique or uncommon bridge configurations, less to commonly represented types. This bias helps to insure that examples from all of the engineering types in Colorado be noted for preservation. Finally, special structural or decorative features are given consideration for technological or aesthetic notability.

The third category - general significance - is weighted the same as technological significance, with a maximum of 35 points possible. This category takes into consideration the aesthetics of the structure's setting, its historical significance and structural and locational integrity. Historical significance relates the bridge to broader settlement, government and transportation trends and rates something apart from its engineering merits. Structural integrity questions whether the bridge functions as originally intended or has been significantly altered through subsequent construction. Deck replacement is considered a maintenance procedure and not a structural alteration. Locational integrity looks at whether the bridge remains in its original setting or has been moved. Because some bridge superstructures are by nature moveable and relocation is a significant aspect of bridge chronology, moved spans are not heavily penalized in this rating. The bridge rating system for Colorado is detailed on the following pages.

# BRIDGE RATING SYSTEM

## COLORADO BRIDGE SURVEY

### DOCUMENTATION (maximum 30 points)

#### Date of construction

Pre -1890 . . . . .	15
1890-1899 . . . . .	12
1900-1909 . . . . .	10
1910-1919 . . . . .	8
1920-1940 . . . . .	4
Post-1940 . . . . .	0

(Add 5 points for earliest documented example of type or significant later example of type. When date is estimated, one-half value is assigned.)

#### Builder

Known, significant Colorado builder . . . . .	10
Known, significant out-of-state builder . . . . .	8
Known, Colorado builder . . . . .	6
Known, out-of-state builder . . . . .	4
Unknown . . . . .	0

### TECHNOLOGICAL SIGNIFICANCE (maximum 35 points)

Number of spans (point for each when two or more) . . . . . 4 (max.)

#### Length of individual spans

Steel Pratt through truss 125' or greater . . . . .	3
Steel Pratt through truss 150' or greater . . . . .	5
Other steel through truss 150' or greater . . . . .	3
Other steel through truss 175' or greater . . . . .	5
Steel pony truss 60' or greater . . . . .	3
Steel pony truss 80' or greater . . . . .	5
Steel girder 50' or greater . . . . .	5
Timber truss 100' or greater . . . . .	5
Concrete arch 50' or greater . . . . .	3
Concrete arch 60' or greater . . . . .	5
Other concrete structure 50' or greater . . . . .	5
Rubble arch 15' or greater . . . . .	3
Rubble arch 20' or greater . . . . .	5
Mountain tunnel 200' or greater . . . . .	5

Geometry/configuration

1-2 surviving examples of type in Colorado . . . . .	15
3-4 . . . . .	10
5-10 . . . . .	6
11-20 . . . . .	4
More than 20 . . . . .	0

Special features

Patented features . . . . .	2
Decorative or distinctive elements . . . . .	2
Builder's or dedication plate . . . . .	2

GENERAL SIGNIFICANCE (maximum 35 points)

Aesthetics of setting

Excellent . . . . .	5
Good . . . . .	3
Fair . . . . .	1
Poor . . . . .	0

Historical significance

National significance . . . . .	20
State significance . . . . .	15
Regional significance . . . . .	10
Significance minimal or undetermined . . . . .	0

Structural integrity

Original super- and substructure intact . . . . .	5
Superstructure intact and substructure altered . . . . .	3
Superstructure altered or braced . . . . .	1
Bridge substantially altered, damaged or deteriorated. . . . .	0
Unknown. . . . .	0

Locational integrity

Original location . . . . .	5
New location, moved pre-1945. . . . .	3
New location, moved post-1945. . . . .	0
Unknown. . . . .	0

After the winnowing process through application of the numerical criteria, several bridges emerged with similar, but not outstanding, significance. To address this a three-tier system was employed to describe the bridges' potential for NRHP eligibility. The categories were:

Eligible - bridges which are unique or rare examples of technologically important types or have exceptional historical or representational value from larger bridge groups.

Possibly eligible - bridges which are good early examples of their types or are notable variations from classical configurations; bridges which have some historical yet limited technological significance.

Not eligible - bridges which are typical later examples of common types; bridges which have been substantially altered.

The distinction between the first two groups became exceedingly fine when no clearcut examples emerged from particular thematic groupings. The cutoff between the possibly eligible bridges and those determined not eligible was more sharply defined. The numerical system ranges from 1 to 100, and the general cutoff guidelines have been set at:

60+	points	eligible
40-59	points	possibly eligible
1 - 39	points	not eligible

The rating was not intended to be a hardline arbiter of importance but a means to quantify an array of factors which contribute to relative significance. Some bridges were up- or down-graded in categories, deviating from their numerical scores, based on the consultant's judgement in consultation with CDH staff.

To arrive at a definitive list of bridges to be nominated to the National Register, the consultant's findings were presented to an nine-member Advisory Board. Comprised of representatives from the Colorado Department of Highways, the Colorado Preservation Office, the Historic American Engineering Record, the Federal Highway Administration and an independant bridge engineer - the Board considered each bridge in categories 1 and 2 and voted for each. Sixty-five bridges were determined potentially eligible for NRHP. As the final step in the inventory process, these were grouped into a thematic nomination titled "Vehicular Bridges in Colorado."

The following pages give the bridge inventory data, with numerical ratings and evaluations for potential eligibility for the Register. (Nominated bridges are indicated by a heavy box in the comments section.) The complete listing of bridges in the inventory is given. Individual HAER inventory cards for all of the nominated bridges are included in Section 5, Appendices

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Adams	Baseline Bridge	1926	M.F. Levy Construction Company Denver Co.	riveted steel Warren pony truss w/verticals	80'	3 46	█ only multi-span example of type
Adams	ADA168-12.05070 A001*						
Adams	Baseline Bridge	1926	M.F. Levy Construction Company Denver Co.	riveted steel Warren pony truss w/verticals	80'	1 43	
Adams	ADA168-12.1N071 A002						
Adams	Bridge over O'Brien Canal	c1925		riveted steel Pratt pony truss	60'	1 3	
Adams	ADA012-115.2058 A003						
Alamosa	5 State Street Bridge						bridge removed
	003000000.000001 A001						
Arapahoe	Bridge over Little Dry Creek	c1940		riveted steel Pratt pony truss	52'	1 3	
	GWDV-05-0.45-02 A001						
Arapahoe	Euclid Avenue Bridge	c1920		riveted steel Pratt half-hip pony truss	44'	1 9	
	LTNC.874-04.424 A002						
Arapahoe	West Crestline Avenue Bridge	c1930		steel deck girder	50'	2 8	
	LTNB.410-03.810 A003						
Arapahoe	Oxford Avenue Bridge	c1940		reinf. concrete prestressed deck girder	100'	2 29	
	SHER-01-0.50-01 A004						
Arapahoe	Bridge over West Bijou Creek	c1920		riveted steel Pratt half-hip pony truss	75'	1 17	
	ARA 50-43.2 A005						
Arapahoe	Platte River Drive Bridge	c1925		steel deck girder	42'	1 3	
	PLLO A006						
Arapahoe	Bridge over Dad Clark Gulch	1939	George W. Condon Company	reinf. concrete rigid frame	58'	1 20	
	F-16-F A007						
Archuleta	Lado Del Rio Bridge	1913	Missouri Valley Bridge and Iron Company	pin/riveted steel Pratt through truss	115'	1 41	█ earliest Highway Commission truss; pin/rigid hybrid
	ARF50-W0.1-5151 AC01*		Leavenworth Ks.				
Archuleta	Pagosa Junction Bridge	c1930		riveted steel Pratt pony truss	50'	1 3	
	AR500-15.B-S151 AC02						
Archuleta	Fourth Street Bridge	1924	Shields and Kyle Pagosa Springs Co.	riveted steel Parker through truss	150'	1 23	
	LT.PLT.8RIDGE AC03*	m1954					
Archuleta	Bridge over San Juan River	1936	Cook and Ransom	riveted steel Camelback pony truss	100'	1 28	
	0-09-A AC04						
Archuleta	Bridge over San Juan River	1938	Larson Construction Company	riveted steel Camelback pony truss	125'	1 32	
	0-09-I AC05						
Baca	Bridge over Unnamed Creek	1936	Works Projects Administration	segmental rubble arch	12'	2 23	
	BAB-35.9-1-87 BA01						
Baca	Bridge over Soldier Creek	1936	Works Projects Administration	semicircular rubble arch	16'	2 26	
	BACC-2.2-25-34 BA02						
Baca	Bridge over Bear Creek	1936	Works Projects Administration	semicircular rubble arch w/stilted haunches	10'	2 23	
	BA0D-40.5-26-56 BA03						
Baca	Bridge over Tributary to Cimarron River	1936	Works Projects Administration	segmental rubble arch	14'	2 23	
	BAF-39.9-5-70 BA04						
Baca	Bridge over Unnamed Creek	1936	Works Projects Administration	semicircular rubble arch w/stilted haunches	10'	2 23	
	BAH-14.5-7-52 BA05						

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Baca	Bridge over W. Carrizo Creek BAL-4.2-10-48 BA06	1936	Works Projects Administration	semicircular rubble arch	11'	3 24	
Baca	Bridge over Plum Creek BA11-11-32.9-10 BA07	1936	Works Projects Administration	semicircular rubble arch	10'	3 24	
Baca	Bridge over Two Buttes Creek BA12-12-40-16 BA08	1936	Works Projects Administration	semicircular rubble arch	12'	2 23	
Baca	Bridge over Sand Arroyo Creek BA23-23-15.5-80 BA09	1936	Works Projects Administration	semicircular rubble arch	6'	4 25	
Baca	Bridge over Sand Arroyo Creek BA23-23-17.3-79 BA10	1936	Works Projects Administration	semicircular rubble arch	6'	3 24	
Baca	Bridge over Sand Arroyo Creek BA23-23-18.1-74 BA11	1936	Works Projects Administration	semicircular rubble arch	12'	2 23	
Baca	Bridge over North Fork Cimarron River BA28-28-8.8-78 BA12	1936	Works Projects Administration	semicircular rubble arch	12'	2 23	
Baca	Bridge over Dry Creek BA35-35.3-23-83 BA13	1936	Works Projects Administration	semicircular rubble arch	10'	2 23	
Baca	Bridge over North Fork Cimarron River BA56-56-16.9-69 BA14	1936	Works Projects Administration	semicircular rubble arch	12'	3 24	
Baca	Bridge over South Fork Sand Arroyo BA8-B-15.2-40 BA15	1936	Works Projects Administration	segmental rubble arch w/stilted haunches	8'	3 24	
Baca	Bridge over Bear Creek BA46-46-28.8-57 BA16	1936	Works Projects Administration	semicircular rubble arches w/stilted haunches	14'	4 25	
Baca	Bridge over Bear Creek N-26-A BA17	1937	Southern Colorado Construction Co.	riveted steel Camelback pony truss	125'	2 32	
Baca	Bridge over Cat Creek O-26-C BA18	1937	Oriscoll Construction Company	riveted steel Camelback pony truss	100'	1 23	
Baca	Bridge over Cat Creek O-26-L BA19	1939	Works Projects Administration	semicircular rubble arch	10'	2 23	
Baca	Bridge over Unnamed Draw O-25-I BA20	1932	Works Projects Administration	semicircular rubble arch	12'	3 24	
Baca	Bridge over Unnamed Draw O-29-E BA21	1935	Works Projects Administration	segmental rubble arch	9'	2 28	
Baca	Bridge over Unnamed Draw O-28-F BA22	1935	Works Projects Administration	segmental rubble arch	9'	2 28	
Baca	Bridge over Beatty Creek N-28-G BA23	1938	Works Projects Administration	semicircular rubble arch	16'	2 26	
Baca	Bridge over Buffalo Creek N-28-H BA24	1938	Works Projects Administration	semicircular rubble arch	16'	2 26	
Bent	Prowers Bridge BT34-34.5-31-46 BE01*	1902 1906 1909	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt through and pony & Camelback through	160'	6 69	■ last multi-span truss on lower Arkansas River
Bent	Carver Bridge BT30-30-5.8-30 BE02*	1913	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt pony truss	55'	1 35	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Bent	Bridge over Fort Lyon Canal BT20-21-34.6-26	c1925	BED3	riveted steel Camelback pony truss	100'	1	8
Bent	Bridge over Fort Lyon Canal BTKK-6.3-33-24	c1925	BE04	riveted steel Pratt pony truss	60'	1	6
Bent	Bridge over Fort Lyon Canal BTPP-11-32.8-18	c1925	BE05	riveted steel Pratt pony truss	60'	1	6
Boulder	17th Street Bridge BOLO-03-0.36-01	1906	National Bridge Company Indianapolis In.	segmental reinf. concrete Luten arch	73'	1	38
Boulder	Bridge over Highland Ditch No. 2 C-16-A	1938	James B. Kenney	reinf. concrete rigid frame	12'	1	25
Boulder	Bridge over Coal Creek 0-16-C0	1939	Sacra and Watts	reinf. concrete rigid frame	90'	1	35
Chaffee	Granite Bridge CHA397-00.03	1911	Pueblo Bridge Company Pueblo Co.	riveted steel Pratt pony truss	65'	1	49
Chaffee	Morley Bridge CHA295A-00.40	1881	New Jersey Iron Co.; DSP&P RR track crew	pinned iron Pratt deck truss	80'	1	75
Chaffee	Everett Bridge CHA16S-01.48	c1925	CA01*	riveted steel Pratt pony truss	45'	1	3
Chaffee	Big Bend Bridge CHA166-00.05	c1930	CA04	riveted steel Camelback pony truss	100'	1	3
Chaffee	Ute Trail Bridge CHA17S-03.39	1880	Edge Moor Bridge Works Wilmington 01.	iron deck girder	45'	1	53
Chaffee	Brown's Canon Bridge CHA191-01.57	1908	Pueblo Bridge Company Pueblo Co.	reinf. concrete slab-and-girder	40'	2	57
Chaffee	F Street Bridge SAL00F-00.95	1907	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	60'	2	60
Chaffee	Bridge over Arkansas River CHA301-00.15	c1930	CA08	steel deck girder	52'	2	3
Chaffee	Four Mile Bridge CHA371-01.70	1909	Pueblo Bridge Company Pueblo Co.	riveted steel truss leg bedstead	50'	1	58
Chaffee	Bridge over Arkansas River I-12-T	1937	M.E. Carlson	riveted steel Pratt deck truss	125'	1	45
Chaffee	Bridge over Big Sandy Draw I-12-B	1938	Switzer and Horner Denver Co.	riveted steel Camelback pony truss	80'	1	28
Chaffee	Hortense Bridge J-12-0	1880	New Jersey Iron Co.; OSP&P RR track crew	pinned timber/iron Queenpost pony truss	39'	1	71
Chaffee	Bridge over Arkansas River J-12-AK	CA10*		pinned steel Parker pony truss	103'	1	32
Chaffee	Bridge over South Arkansas River J-12-A	1938	Lowdermilk Brothers CA14	riveted steel Camelback pony truss	100'	1	28
Chaffee	Bridge over Cottonwood Creek 1-12-A	c1945	CA15	semicircular rubble arch	18'	1	14

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS FT.	COMMENTS
Cheyenne	Bridge over Smoky Hill River CY49-1.0-T	c1935	CY01	riveted steel Camelback pony truss	80' 1 6	
Cheyenne	Bridge over Smoky Hill River CY53-1.1-U	c1935	CY02	riveted steel Camelback pony truss	80' 1 6	
Cheyenne	Bridge over Smoky Hill River CY54-0.9-U	c1935	CY03	riveted steel Camelback pony truss	80' 1 6	
Clear Creek	Miner Street Bridge IDAHO SPG5. 01	1901	Kuyes and Work Idaho Springs Co.	pinned steel skewed Pratt pony truss	60' 1 42	good early example of type; only pin-skewed pony truss
Clear Creek	Bridge over Clear Creek F-15-N	1936	M.E. Carlson	riveted steel Camelback pony truss	100' 1 28	
Clear Creek	Tunnel No. 5 F-15-Y	1939	Pioneer Const. Company Hinman Brothers Frank M. Kenney	tunnel	411' 1 34	
Clear Creek	Tunnel No. 6 F-15-X	1939	Pioneer Const. Company Hinman Brothers Frank M. Kenney	tunnel	588' 1 34	
Clear Creek	Tunnel No. 4 F-15-K	1939	Pioneer Const. Company Hinman Brothers Frank M. Kenney	tunnel	192' 1 29	
Conejos	Costilla Crossing Bridge CON14.6E-00.0N	1892	Wrought Iron Bridge Company Canton Ohio	pinned iron/steel Thatcher through truss	155' 2 86	most technologically significant bridge in survey
Conejos	Ortiz Bridge CON01.1W-05.6S	1922		riveted steel Camelback pony truss	80' 1 8	
Conejos	Bridge over Conejos River CON05.0E-05.8N	1928	CN03	riveted steel Pratt pony truss	44' 1 3	
Conejos	Bridge over Alamosa River CON04.0W-14.2N	c1930	CN04	riveted steel Warren pony truss w/alt. verticals	40' 1 9	
Conejos	Bridge over Conejos River P-13-B	1928	C.A. Switzer Denver Co.	riveted steel Camelback pony truss	100' 1 28	
Conejos	Bridge over Rio Grande River P-14-A	1924	CN05	Switzer and Ollion Denver Co.	riveted steel Pratt through truss	125' 2 38
Conejos	Capulin Bridge CON05.0W-13.6N	1908	CN06	Walter Sharp Bridge Company El Dorado Ks.	reinf. concrete slab-and-girder	50' 1 48
Costilla	San Luis Bridge CSSMME-0.1-S159	1911	CS01*	M.F. Levy Construction Company Denver Co.	reinf. concrete open spandrel deck arch	57' 1 57 excellent early example of type
Crowley	Bridge over Dry Wash CRC0 1.50-1	1907	CRO1	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt pony truss	75' 1 42
Crowley	Bridge over Dead Horse Creek CRC0 6.40-2	1907	CRO2*	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt pony truss	75' 2 44
Crowley	Bridge over Bob Creek CRC0 1.25-11	1907	CRO3	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt pony truss	75' 1 40
Crowley	Bridge over Bob Creek CRC0 0.75-22	1907	CRO4	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt pony truss	75' 1 40
Crowley	Bridge over Bob Creek CRC0 1.80-9	1927	CRO5	Monarch Engineering Company Denver Co.	riveted steel Pratt pony truss	50' 1 29

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	PAIG.	COMMENTS
Crowley	Bridge over Colorado Canal CRCO 0.80-1S	1927 CR06	Monarch Engineering Company Denver Co.	riveted steel Pratt pony truss	50' 1	29	
Crowley	Bridge over Colorado Canal CRCO 1.1D-13	1927 CR07	Monarch Engineering Company Denver Co.	riveted steel Pratt pony truss	75' 1	30	
Crowley	Bridge over Colorado Canal CRCO 3.50-6	1927 CR08	Monarch Engineering Company Denver Co.	riveted steel Pratt pony truss	50' 1	27	
Crowley	Bridge over Colorado Canal CRCO 3.2D-27	1930 CR09	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	46' 1	29	
Crowley	Bridge over Bob Creek CRCO 1.80-18	1930 CR10	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	50' 1	29	
Crowley	Bridge over Colorado Canal CRCO 3.7S-S	1930 CR11	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	47' 1	27	
Crowley	Bridge over Colorado Canal CRCO 0.75-14	1930 CR12	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	47' 1	29	
Crowley	Manzanola Bridge L-21-8D	1911 CR13*	Patterson-Burghardt Bridge Company Denver Co.	riveted steel Pennsylvania through truss	300' 1	57	■ longest-span truss in survey; oldest example of type
Delta	Roubideau Bridge OELG50R-2.2-11	1911 DLD1*	Pueblo Bridge Company Pueblo Co.	riveted stl Warren through truss w/ alt. vert. & polyg.	192' 1	75	■ unique example of uncommon truss type
Delta	Paonia Bridge OEL41750-D.2-S7	1911 DL02*	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt through truss	125' 1	36	
Delta	Bridge over Gunnison River OEL2200R-120-44	c1930 DL03		riveted steel Camelback pony truss	100' 3	11	
Delta	Bridge over Buttermilk Creek OELGR-10.7-10	c1930 DL04		riveted steel Camelback pony truss	100' 1	8	
Delta	Bridge over Escalante Creek OEL650R-2.9-36	c1940 DL05		riveted steel Pratt pony truss	60' 1	5	
Delta	Hotchkiss Bridge DEL3400R-0.S-49	1911 DL06*	Pueblo Bridge Company Pueblo Co.	pinned steel Camelback through truss	150' 1	46	■ one of 4 of type in survey
Delta	Escalante Canon Bridge DEL650R-2.8-35	1890 m1908 m1938 DL07*	Bullen Bridge Company Pueblo Co.	pinned steel Camelback through truss	196' 2	75	■ outstanding early steel truss; oldest and longest of type
Delta	Delta Bridge 1-04-A	1923 DL08*	Winterburn and Lumsden Grand Junction Co.	riveted steel Parker through truss	150' 4	46	■ significant early multi-span highway truss
Delta	Bridge over Gunnison River I-05-V	1938 DL09	Switzer and Horner Denver Co.	riveted steel Camelback pony truss	125' 3	36	
Denver	19th Street Bridge D-02-PR-06D	1888 OE01*	Missouri Valley Bridge and Iron Company Leavenworth Ks.	pinned steel Pratt through truss	101' 2	66	■ oldest roadway truss in survey; oldest example of type
Denver	23rd Street Viaduct 0-03-V-030	1909 OE02	American Bridge Company (fabricator) Chicago Il.	multiple-span steel girder/ trussed viaduct	2681' 52	33 tot.	
Denver	20th Street Viaduct D-03-V-D50	1907 OE03*	Milwaukee Bridge Co. Milwaukee Wf.	multiple-span steel girder/ trussed viaduct	4251' 85	46 tot.	■ longest and best of trussed viaducts in survey
Denver	Broadway Viaduct D-03-V-020	1922 OE04		multiple-span steel girder/ trussed viaduct	2266' 46	25 tot.	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Denver	Blake Street Bridge	1899		steel deck girder	25'	4	27
	D-01-CC-030 DE05						
Denver	Broadway Bridge	1895	Youngstown Bridge Company Youngstown Oh.	open-web steel deck girder	122'	1	65 ■ only example of type in survey
	D-01-CC-180 DE06*						
Denver	14th Street Viaduct	1889	Youngstown Bridge Company Youngstown Oh.	steel stringer viaduct	1467'	63	60 tot. ■ only 19th century tram/wagon viaduct remaining
	D-03-V-100 DE07*	1897					
Denver	16th Street Viaduct	1924		reinf. concrete open arch/rigid frame viaduct	3590'	93	39 tot.
	D-03-V-080 DE08						
Denver	W. Alameda Avenue Railroad Underpass	1910	Milwaukee Bridge Co. Milwaukee Wi.	steel railroad deck girder	33'	2	33
	D-06-RRU-101 DE09						
Denver	W. Alameda Avenue Railroad Underpass	1910	Milwaukee Bridge Co. Milwaukee Wi.	steel railroad deck girder	33'	2	33
	D-06-RRU-102 DE10						
Denver	W. Alameda Avenue Railroad Underpass	1910	Milwaukee Bridge Co. Milwaukee Wi.	steel railroad deck girder	33'	2	33
	D-06-RRU-103 DE11						
Denver	W. 38th Avenue Railroad Underpass	1925		steel railroad deck girder	44'	1	19
	D-06-RRU-080 DE12						
Denver	W. Iowa Avenue Railroad Underpass	1926		steel railroad deck girder	20'	2	21
	D-06-RRU-131 DE13						
Denver	W. Iowa Avenue Railroad Underpass	1926		steel railroad deck girder	20'	2	21
	D-06-RRU-132 DE14						
Denver	Washington Street Railroad Underpass	1927		steel railroad deck girder	32'	1	19
	D-06-RRU-070 DE15						
Denver	W. 13th Avenue Bridge	1927		steel deck girder		2	22
	D-02-PR-130 DE16						
Denver	W. Eighth Avenue Bridge	1929		steel deck girder		3	23
	D-02-PR-150 DE17						
Denver	W. Eighth Avenue Viaduct	1936		multiple-span steel girder/ trussed viaduct	2938'	48	23 tot.
	D-03-V-150 DE18						
Denver	W. 38th Avenue Railroad Underpass	1937		steel railroad deck girder	46'	1	19
	D-06-RRU-091 DE19						
Denver	W. 38th Avenue Railroad Underpass	1937		steel railroad deck girder	46'	1	19
	D-06-RRU-092 DE20						
Denver	W. Eleventh Avenue Bridge	1925		reinf. concrete rigid frame		2	21
	D-01-CC-160 DE21						
Denver	W. 13th Avenue Bridge	1928		reinf. concrete rigid frame		2	21
	D-01-CC-150 DE22						
Denver	Washington Street Bridge	1929		reinf. concrete rigid frame		2	21
	D-01-CC-230 DE23						
Denver	Bannock Street Bridge	1908	Commonwealth Construction Company Denver Co.	reinf. concrete 3-hinge open-span-diel deck arch	135'	1	47
	D-01-CC-170 DE24*						
Denver	Wazee Street Bridge	1899		steel deck girder	54'	2	30
	D-01-CC-020 DE25						

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATG.	COMMENTS
Denver	Bridge over Unnamed Draw F-16-BM	1922 DE26		reinf. concrete open spandrel deck arch	79' 1	32	
Denver	Highway 1445 Viaduct E-16-B	1907 OE27	American Bridge Company (fabricator) Chicago Il.	multiple-span steel girder/ trussed viaduct	4200' tot.	31	
Denver	Colfax Viaduct F-16-BL	1917 DE28		steel trussed viaduct	518' tot.	29	

Douglas	Keystone Bridge DU01	c1890 m1903	Keystone Bridge Company Pittsburgh Pa.	pinned steel Pratt through truss w/ keystone columns	1	<input checked="" type="checkbox"/> determined eligible for NRHP; currently dismantled	
Douglas	Bridge over Cherry Creek DOU008-06-05	c1930 DU02					
Douglas	Bridge over Cherry Creek DOU014-00-32	c1935 DUD3		steel deck girder	30' 2	3	
Douglas	AT&SF RR Bridge F-16-U	1923 DU04	M.J. Kenney	steel railroad deck girder	59' 1	26	
Douglas	AT&SF RR Bridge F-16-T	1923 DU05	M.J. Kenney	steel railroad deck girder	72' 1	26	
Eagle	Bridge over Eagle River EAG-EDW-00-1	c1940 EA01		welded steel pipe Camelback pony truss	90' 1	8	
Eagle	Wilmot Ranch Bridge EAG-02B-03.6	EA02					bridge removed
Eagle	Bridge over Colorado River F-08-F	1935 EA03	Switzer and Horner Denver Co.	riveted steel Parker through truss	150' 1	32	
Eagle	Bridge over Eagle River F-09-H	1933 EA04	Switzer and Horner Denver Co.	riveted steel Parker through truss	150' 1	32	
Eagle	Bridge over Eagle River F-10-E	1933 EA05	Switzer and Horner Denver Co.	riveted steel Parker through truss	150' 1	32	
Eagle	Bridge over D&RGW Railroad F-11-C	1929 EA06 *	J. Fred Roberts & Sons Denver Co.	riveted steel Pratt deck truss	120' 1	38	
Eagle	Bridge over Eagle River F-11-D	1929 EA07 *	J. Fred Roberts & Sons Denver Co.	riveted steel Pratt deck truss	120' 1	38	
Eagle	Basalt Bridge G-DB-J	1938 EA08	Switzer and Horner Denver Co.	riveted steel Camelback pony truss	100' 1	28	
Eagle	Bridge over Eagle River F-09-A	1933 EA09	Hinman Brothers Construction Company	riveted steel Camelback pony truss	100' 1	28	
Eagle	Gypsum Bridge	1914 EA10 *	Pueblo Bridge Company Pueblo Colorado	segmental concrete Luten arch	60' 2	39	
Eagle	Dotsero Bridge F-08-C	1900 EA11 *	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt through truss	150' 2	52	
Eagle	Red Cliff Bridge F-11-T	1940 EA12 *	Frank M. Kenney	riveted steel deck arch	318' 1	71	<input checked="" type="checkbox"/> only example in survey of type

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATG	COMMENTS
Eagle	Sage Bridge	1907	Denver Bridge Company Denver Co.	pinned steel Pratt pony truss	70'	1 31	
	EA13*						
Eagle	Wolcott Bridge	1916	Pueblo Bridge Company Pueblo Co.	segmental concrete Luten arch	58'	2 53	
	F-10-B	EA14*					
Eagle	State Bridge	1890	Missouri Valley Bridge and Iron Works Leavenworth Ks.	pinned timber and iron Howe through truss	100'	2 77	■ important early bridge; only example of type in survey
	E-10-A	EA15*					
Elbert	Bridge over Mustang Creek ELBT-173-1.0-01	c1930		riveted steel Pratt half-hip pony truss	75'	1 12	
	EL01						
Elbert	Bridge over Big Sandy Creek ELBT-125-0.3-09	c1930		steel deck girder	34'	6 7	
	EL02						
Elbert	Bridge over Kiowa Creek ELBT-98-0.20-02	c1930		riveted steel Camelback pony truss	100'	1 8	
	EL03						
El Paso	Hancock Avenue Bridge	c1935		riveted Warren pony truss w/alt. verticals	62'	2 10	
	CSGH0.56-11.95	EP01					
El Paso	Cascade Avenue Bridge	c1930		reinforced concrete filled spandrel deck arch	18'	1 17	
	CSGGD.27-07.04	EP02					
El Paso	Polk Street Bridge	c1920		steel deck girder	74'	1 8	
	CSGE0.22-05.64	EP03					
El Paso	Alsace Way Bridge	c1940		reinforced concrete filled spandrel deck arch	24'	1 3	
	CSGF0.80-06.50	EP04					
El Paso	Bridge over Cottonwood Creek CSGI0.01-15.11	1922	Standard Engineering and Construction Co.	reinforced concrete slab-and-girder	53'	4 38	
	EP05						
El Paso	Buttes Bridge	1922	Pueblo Bridge Company Pueblo Co.	riveted steel Parker through truss	150'	2 34	
	EPC0415-01.20	EP06*					
El Paso	Park Avenue Bridge	1907	local masons	semicircular rubble arch	18'	1 30	■ earliest example of type in survey (see EP08)
	EP07*						
El Paso	Canon Avenue Bridge	1906	local masons	semicircular rubble arch	21'	1 42	■ earliest example of type in survey (see EP07)
	MANITOU-CANON	EP08*					
El Paso	Bridge over Black Squirrel Creek H-18-A	1935	Owen and Horner Denver Co.	riveted steel Parker through truss	150'	1 32	
	EP09						
El Paso	Bridge over Little Fountain Creek J-17-F	1936	Works Projects Administration	semicircular rubble arch	15'	2 26	
	EP10						
El Paso	O&RGW Railroad Bridge I-17-G	1901 m1942	American Bridge Company Lassing Branch Lassing Il.	steel railroad through girder	46'	1 27	
	EP11						
El Paso	O&RGW Railroad Bridge H-17-W	1927	F.L. Hoffman	steel railroad through girder	40'	1 21	
	EP12						
El Paso	Bridge over Pine Creek I-17-B	1936	Pueblo Bridge Company Pueblo Co.	reinforced conc. open spandrel deck arch	140'	1 40	
	EP13						
El Paso	Bridge over Fountain Creek I-17-A1	1932	Pueblo Bridge Company Pueblo Co.	reinforced conc. open spandrel deck arch	162'	1 40	■ excellent example of type
	EP14*						
Fremont	Fourth Street Bridge CC 2-FOURTH ST.	1891	Bullen Bridge Company Pueblo Co.	pinned steel Pratt through truss	105'	1 51	■ excellent early example of type
	FR01*						

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Fremont	First Street Bridge	1928	Denver Steel and Iron Company Denver Co.	riveted steel Pratt through truss	120'	1 31	
	CC 3-FIRST ST. FR02						
Fremont	New York Avenue Bridge	c1920		riveted steel Warren pony truss w/alt. verticals	50'	1 11	
	CC 7- NEW YORK A FR03						
Fremont	Temple Canon Bridge	1929	Denver Steel and Iron Company Denver Co.	riveted steel Camelback pony truss	100'	1 28	
	CC 11- TEMPLE FR04						
Fremont	Tunnel Drive Bridge						bridge removed
	CC 8-TUNNEL OR. FR05						
Fremont	Tunnel Drive Bridge						bridge removed
	CC 9-TUNNEL OR. FR06						
Fremont	Second Street Bridge	c1930		steel deck girder	40'	1 3	
	CC 5-SECOND ST. FR07						
Fremont	Griffin Avenue Bridge	c1930		steel deck girder	58'	1 8	
	CC 4-GRIFFIN AV FR08						
Fremont	Stanley Avenue Bridge	c1930		steel deck girder	43'	1 3	
	CC 6-STANLEY AV FR09						
Fremont	Second Street Bridge	c1940		steel deck girder	33'	1 3	
	CC 10-2ND ST. FR10						
Fremont	Siloam Bridge	1900	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt through truss	100'	1 33	
	FRCO 19-209 FR11*						
Fremont	Texas Creek Bridge	1907	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt pony truss	82'	1 40	
	FRCO 308-TX CK FR12*						
Fremont	Cotopaxi Bridge			pinned steel Pratt through railroad truss	103'	1 21	
	FRCO 12-306 FR13						
Fremont	Cyanide Bridge						bridge removed
	FRCO 79-101 FR14						
Fremont	Coaldale Bridge			pinned steel Pratt through railroad truss	110'	1 21	
	FRCO 305-COALDL FR15						
Fremont	Parkdale Bridge	1921	H.M. Fox	riveted steel Warren pony truss w/verticals	77'	1 37	
	FRCO 303-PRKDL FR16						
Fremont	Bridge over Eightmile Creek	c1920		riveted steel modified Queenpost pony truss	41'	1 18	
	FRCO 132-108 FR17						
Fremont	Bridge over Beaver Creek	1923	Denver Steel and Iron Company Denver Co.	riveted steel Camelback pony truss	100'	1 30	
	FRCO 120-211 FR18						
Fremont	Bridge over Eightmile Creek	1928	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	51'	1 25	
	FRCO 3-217 FR19						
Fremont	Bridge over Hardscrabble Creek	c1930		timber/steel modified Queenpost pony truss	47'	1 3	
	FRCO 19-208 FR20						
Fremont	Wellsville Bridge	1912	Pueblo Bridge Company Pueblo Co.	riveted steel Pratt pony truss	85'	1 36	
	FRCO 300-0.10 FR21*						
Fremont	Howard Bridge	1924	Minneapolis Steel and Machinery Company Minneapolis Mn.	riveted steel Warren pony truss w/alt. vert. & poly.	102'	1 45	only dateable example of type in survey
	FRCO 301-HOWARO FR22*						

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Fremont	Vallie Bridge	1925	Monarch Engineering Company Denver Co.	riveted steel Camelback pony truss	104'	1 32	
	FRCO 314-VALLIE FR23						
Fremont	Cherry Creek Bridge	c1930		riveted steel Camelback pony truss	100'	1 8	
	FRCO 302-CHERRY FR24						
Fremont	Bridge over Fourmile Creek	c1935		riveted steel Warren pony truss w/verticals	60'	1 9	
	FRCO 9-113 FR25						
Fremont	Bridge over Oak Creek	c1935		riveted steel Warren pony truss w/alt. verticals	50'	1 9	
	FRCO 12-313 FR26						
Fremont	Bridge over Fourmile Creek	c1935		riveted steel Warren pony truss w/alt. verticals	50'	1 9	
	FRCO 9-112 FR27						
Fremont	Bridge over Red Gulch	c1935		riveted steel Warren pony truss w/alt. verticals	51'	1 9	
	FRCO 12-304 FR28						
Fremont	Bridge over Fourmile Creek	c1940		riveted steel Pratt pony truss	60'	1 6	
	FRCO 9-111 FR29						
Fremont	Bridge over Eightmile Creek	c1930		steel through girder	37'	1 7	
	FRCO 2-216 FR30						
Fremont	Bridge over Eightmile Creek	c1930		steel through girder	57'	1 12	
	FRCO 12-226 FR31						
Fremont	Bridge over Eightmile Creek	c1930		steel through girder	48'	1 7	
	FRCO 13-227 FR32						
Fremont	Petroleum Avenue Bridge	c1930		steel through girder	45'	1 3	
	FRCO 233-PETRO. FR33						
Fremont	Oak Creek Avenue Bridge	c1930		steel deck girder	33'	1 3	
	RV 1-OAK CK. FR34						
Fremont	Bridge over Eightmile Creek	c1930		steel deck girder	40'	1 7	
	FRCO 14-228 FR35						
Fremont	Bridge over Dry Creek	c1930		steel through girder	38'	2 3	
	FRCO 16-229 FR36						
Fremont	Coal Creek Bridge	c1930		steel through girder	38'	1 3	
	FRCO 95-204 FR37						
Fremont	Highland Avenue Bridge	c1930		steel deck girder	28'	1 3	
	FRCO 103-HL AVE FR38						
Fremont	Grandview Avenue Bridge	c1930		steel deck girder	29'	1 3	
	FRCO 104-GRV AV FR39						
Fremont	Bridge over Eightmile Creek	c1910		steel through girder	55'	1 17	
	FRCO 4-21B FR40						
Fremont	Bridge over unnamed creek	c1935		steel deck girder	36'	1 3	
	FRCO 6-220 FR41						
Fremont	Bridge over Eightmile Creek	c1930		steel through girder	47'	1 7	
	FRCO 123-214 FR42						
Fremont	Bridge over Oak Creek	c1940		steel deck girder	58'	1 8	
	FRCO 143-115 FR43						

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Fremont	Mesa Avenue Bridge	c1940		steel deck girder	28'	1	3
	RV 2-HESA AVE. FR44						
Fremont	West Second Street Bridge	1908	Fox and Smith Florence Co.	segmental reinf. concrete filled spandrel arch	50'	1	37
Fremont	FRCO 231-W2NDST FR45*						
Fremont	Third Street Bridge	1916	Fox and Smith Florence Co.	segmental reinf. concrete filled spandrel arch	45'	1	33
Fremont	FRCO 232-3RD ST FR46						
Fremont	West Third Street Bridge	1908	Fox and Smith Florence Co.	segmental reinf. concrete filled spandrel arch	40'	1	34
Fremont	FRCO 13A-203 FR47*						
Fremont	Bridge No. 10	1894	Orman and Crook Pueblo Co.	steel railroad deck girder trestle	69'	3	66
	FRCO 10-224 FR48*						■ excellent early railroad trestle on important rail line
Fremont	Coaldale Bridge	1906	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt through truss	105'	1	31
	FR49*						
Fremont	Second Street Bridge	1916	Fox and Smith Florence Co.	reinf. concrete slab-and-girder	50'	1	33
	FR50						
Fremont	Fifth Street Bridge	1916	Fox and Smith Florence Co.	segmental reinf. concrete filled spandrel arch	50'	1	33
	FR51						
Fremont	Portland Bridge	1926	H.M. Fox Florence Co.	riveted steel Pratt semi-deck truss	150'	1	53
	K-16-K FR52*						■ only example of uncommon truss type in survey
Fremont	Bridge over Hardscrabble Creek K-16-Q	1928	Minnesota-Moline Power Implement Company Minneapolis Mn.	riveted steel Parker through truss	125'	1	29
	FR53						
Fremont	Bridge over Spring Creek K-13-G	1934	Gordon Construction Company	segmental reinf. concrete filled spandrel arch	55'	1	28
	FR54						
Fremont	Bridge over Arkansas River K-15-I	1937	Oriscoll Construction Company	riveted steel Parker through truss	175'	1	34
	FR55						
Fremont	Bridge over D&RGW RR K-16-S	1930	Mountain States Construction Company	reinf. concrete slab-and-girder	46'	6	31
	FR56						
Fremont	Bridge over Adobe Creek K-16-AN	c1910 1951	Brown Construction Company (remodeler)	steel through girder	58'	1	10
	FR57						
Fremont	Royal Gorge Bridge	1929	Royal Gorge Bridge and Amusement Company Canon City Co.	steel suspension bridge	880'	1	77
	FR58*						■ longest bridge in state; enrolled on NRHP in 1983
Fremont	Tunnel No. 1	1894	Orman and Crook Pueblo Co.	mountain tunnel	166'	1	58
	FR59*						
Fremont	Tunnel No. 2	1895	Orman and Crook Pueblo Co.	mountain tunnel	247'	1	58
	FR60*						
Garfield	Satank Bridge	1900	Pueblo Bridge Company Pueblo Co.	pinned timber & steel Pratt through truss	100'	1	67
	GA01*						■ only timber Pratt through truss in survey
Garfield	Una Bridge	1910	Charles G. Sheely Construction Company Denver Co.	riveted steel dbl.-inter. Warren through truss	203'	1	75
	GAR300-00.79 GA02*						■ only example of type in survey
Garfield	Hardwick Bridge	1923	Monarch Engineering Company Denver Co.	riveted steel Pratt through truss	131'	1	36
	GAR109-01.43 GA03*						
Garfield	Roan Creek Bridge	1897	Youngstown Bridge Company Youngstown Oh.	pinned steel Pratt through truss	100'	1	41
	GAR202-13.90 GA04*						

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Garfield	South Canon Bridge	1914 GA05*	Missouri Valley Bridge Company Leavenworth Ks.	pinned steel Pennsylvania through truss	190'	1 61	one of two of type in survey
Garfield	Rifle Bridge	1909 GA06*	Charles G. Sheely Construction Company Denver Co.	pinned stl. Parker and Pennsylvania through trusses	240' 190'	2 77	longest pinned truss in survey; unique truss comb.
Garfield	Silt Bridge						bridge removed
	GAR311-12.70	GA07					
Garfield	Glenwood Canon Bridge F-08-L	1937 GA08	Midwest Steel and Iron Company (fab.)	riveted steel Camelback pony truss	125'	2 29	
Garfield	Bridge over Elk Creek F-06-A	1931 GA09	A.R. Mackey	riveted steel Camelback pony truss	100'	1 28	
Grand	Spring Road Bridge	c1925 049002000.10011	GR01	riveted steel Pratt pony truss	60'	2 8	
Grand	Bridge over Williams Fork	1929 049033000.50020	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	60'	1 30	
Grand	Radium Bridge	1927 049001100.10005	Monarch Engineering Company Denver Co.	riveted steel Camelback pony truss	90'	2 34	
Grand	North Fork Bridge	1916 049062000.20024	M.F. Levy Construction Company Denver Co.	riveted steel Pratt pony truss	90'	1 36	
Grand	Bridge over Muddy Creek	c1925 049002500.30003	GR05	riveted steel Pratt pony truss	64'	1 6	
Grand	Bridge over Blue River	c1925 049001001.10001	GR06	riveted steel Pratt pony truss	60'	1 6	
Grand	Bridge over Colorado River D-12-D	1934 GR07	Sacra and Watts	riveted steel Pratt deck truss	91'	2 32	
Grand	Bridge over Colorado River D-13-0	1935 GR08	W.O. Altison	riveted steel Camelback pony truss	100'	2 30	
Grand	Bridge over Fraser River D-13-K	1933 GR09	J.H. Miller and Company	riveted steel Camelback pony truss	100'	1 28	
Gunnison	Bridge over Ohio Creek	GUN818-00.80	GU01				bridge removed
Gunnison	Bridge over Anthracite Creek	c1910 GUN012-05.60	GU02	pinned steel Pratt through truss	141'	1 8	
Gunnison	Bridge over Lake Fork of Gunnison R.	c1930 GUN025-2.20	GU03	timber Pratt pony truss	40'	1 18	
Gunnison	Bridge over North Fork of Gunnison R.	GUN012-00.20	GU04				bridge removed
Gunnison	Four Mile Bridge	c1920 GUN032-10.80	GU05	riveted steel Pratt pony truss	60'	3 11	
Gunnison	Bridge over Taylor River	GUN742-20.80	GU06				bridge removed
Gunnison	Bridge over Willow Creek	c1935 GUN742-24.00	GU07	steel deck girder	50'	1 8	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	CAT.	COMMENTS
Gunnison	Bridge over Texas Creek GUN742-26.80	c1935 GU08		steel deck girder	50'	1	8	3
Gunnison	Bridge over Ruby Anthracite Creek GUN012-21.00	c1940 GU09		steel through girder	48'	1	3	3
Gunnison	Bridge over Gunnison River J-09-C	1926 GU10	Lambie-Bate Construction Company Denver Co.	riveted steel Pratt through truss	125'	1	32	3
Gunnison	Bridge over Gunnison River J-09-0	1926 GU11	Lambie-Bate Construction Company Denver Co.	riveted steel Pratt through truss	125'	1	32	3
Hinsdale	Bridge over Cebolla Creek HIN05-18.19	c1935 HI01		riveted steel Pratt pony truss	50'	1	3	3
Huerfano	Bridge over Sandy Arroyo HU120-2.7-S10	1927 HU01	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	59'	1	25	3
Huerfano	Bridge over Cucharas River HU302-S0.1-S160	c1920 HU02		riveted steel Camelback pony truss	100'	2	10	3
Huerfano	Bridge over Bear Creek HU330-s0.3-S160	c1930 HU03		riveted steel Pratt pony truss	71'	1	6	3
Huerfano	Bridge over Cucharas River HU350-S0.7-S160	c1910 HU04		pinned steel Pratt half-hip pony truss	59'	1	17	3
Huerfano	Bridge over Middle Creek HU450-3.3-S160	c1930 HU05		riveted steel Pratt pony truss	40'	1	3	3
Huerfano	Bridge over Huerfano River HU540-S0.2-S69	c1920 HU06		riveted steel Camelback pony truss	98'	1	8	3
Huerfano	Bridge over Huerfano River HU550-S0.0-S69	c1920 HU07		riveted steel Camelback pony truss	100'	1	3	3
Huerfano	Badito Bridge HU616-0.2-S69	1911 HU08	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	66'	1	42	3
Huerfano	Butte Valley Bridge HU09*	1916 HU09*	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	75'	2	40	3
Huerfano	Bridge over Cucharas River N-18-1	1937 HU10	Relief forces	riveted steel Camelback pony truss	100'	2	18	3
Huerfano	Bridge over Turkey Creek N-16-L	m1932 HU11	Blanchard Kenney	riveted steel Pratt pony truss	60'	1	20	3
Huerfano	Bridge over Cucharas River O-16-E	c1915 HU12		segmental reinf. concrete filled spandrel arch	20'	1	23	3
Jackson	Bridge over Chedsey Creek 057000500.20017	c1925 JA01		riveted steel Camelback pony truss	70'	1	6	3
Jackson	Bridge over Illinois River B-11-C	1937 JA02	F.M. Kenney	riveted steel Camelback pony truss	100'	1	28	3
Jackson	Bridge over Michigan River B-11-A	1937 JA03	Babb and Thorkildsen	riveted steel Camelback pony truss	100'	1	28	3
Jackson	Bridge over North Platte River A-11-H	1938 JA04	Colorado Bridge and Construction Company Denver Co.	riveted steel Camelback pony truss	100'	2	36	3

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Jefferson	Kipling Street Bridge LKWD-0.1-0.60-01 JE01	c1925		riveted steel Camelback pony truss	75'	1	6
Jefferson	Idledale Bridge D-19-30	1909 mc1940 JE02*	Charles G. Sheely Construction Company Denver Co.	riveted steel Pratt half-hip pony truss	44'	1	40
Jefferson	F Avenue Bridge C-19-27	c1920 JE03		riveted steel Warren pony truss w/alt. verticals	46'	1	9
Jefferson	Deckers Bridge E-5-1	c1925 JE04		riveted steel Warren pony truss w/alt. vert. & poly.	80'	1	14
Jefferson	South Platte Bridge F-10-8	c1930 JE05		riveted steel Camelback pony truss	78'	1	6
Jefferson	Bridge over Upper Bear Creek I-1B-22	c1930 JE06		steel deck girder	40'	1	3
Jefferson	Bridge over Upper Bear Creek B-18-19	c1930 JE07		reinf. concrete rigid frame	25'	1	7
Jefferson	Bridge over D&SL Railroad E-15-C	1939 JE08	Pioneer Engineering & Construction Company	steel RR deck girder	38'	1	21
Jefferson	Bridge over Sawmill Gulch F-15-Z	1935 JE09	Sacra and Watts/ Lowdermilk Brothers	reinf. concrete open spandrel arch	89'	1	34
Jefferson	Tunnel No. 2 F-15-AX	1941 JE10	G.L. Tarlton Construction Company	mountain tunnel	1068'	1	35
Jefferson	Tunnel No. 3 F-15-AW	1941 JE11	G.L. Tarlton Construction Company	mountain tunnel	769'	1	30
Kit Carson	Bridge over Spring Creek KITC-0E-3.50-01	c1920 KC01		riveted steel Pratt pony truss	60'	1	6
Kit Carson	Bridge over Landsman Creek G-27-D	1927 KC02		reinf. concrete slab-and-girder	57'	1	20
Lake	Bridge over Arkansas River H-11-J	1936 LA01	Claybaugh & Hallenbeck	riveted steel Camelback pony truss	100'	1	28
La Plata	Bridge over Florida River 067024013.80046	LP01					bridge removed
La Plata	Bridge over Animas River 067021400.00034	m1920 LP02	Monarch Engineering Company Denver Co.	riveted steel military bridge & Pratt pony truss	71'	2	26
La Plata	Trimble Springs Bridge 067025200.20021	LP03					bridge removed
La Plata	Bridge over La Plata River 067011902.0002B	c1930 LP04		riveted steel Pratt pony truss	60'	1	6
La Plata	Bridge over Cherry Creek 06701050B.10026	c1925 LP05		riveted steel Pratt pony truss	61'	1	6
La Plata	Bridge over Florida River 067022300.60019	c1925 LP06		riveted steel Pratt pony truss	60'	1	6
La Plata	Bridge over Florida River 067024500.10011	c1930 LP07		riveted steel Pratt pony truss	51'	1	3

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATG.	COMMENTS
La Plata	Bridge over La Plata River 067012000.30030	c1930	LP08	riveted steel Pratt pony truss	70'	1	6
La Plata	Bridge over Animas River 067025000.70024	c1930	LP09	riveted steel Pratt pony truss	78'	1	6
La Plata	Bridge over Florida River 067023402.10015	c1930	LP10	riveted steel Pratt pony truss	65'	1	6
La Plata	Bridge over Florida River 0670022801.80017	c1935	LP11	riveted steel Pratt pony truss	60'	1	6
La Plata	Hermosa Bridge 067020300.20022	c1925	LP12	riveted steel Pratt pony truss	52'	2	5
La Plata	Bridge over Florida River 067051000.30020	c1940	LP13	riveted steel Pratt pony truss	59'	1	3
La Plata	Second Avenue Bridge 0350.02	c1945	LP14	steel deck girder	24'	1	1
La Plata	Bayfield Bridge P-06-G	1932	J.H. Miller and Company LP15	riveted steel Camelback pony truss	100'	1	28
La Plata	Bayfield Bridge P-06-H	1932	J.H. Miller and Company LP16	riveted steel Camelback pony truss	100'	1	28
Larimer	Linden Street Bridge FCLIND-0.1-WLLW	1902	W.H. Roller 1905 Fort Collins Co.	pinned steel Pratt through and half- hip pony truss	118'	2	48
Larimer	Bryan Avenue Bridge FCOAK-0.0-BRYN	c1920	LR02	steel through girder	25'	1	3
Larimer	Bridge over Little Thompson River LR4-0.9-21	c1920	LR03	riveted steel Pratt pony truss	62'	1	6
Larimer	First Street Bridge LR20-0.6-17	1917	A.J. Robertson Greeley Co. LR04*	rigid/pin skewed Pratt pony truss	50'	1	41
Larimer	Bridge over Little Thompson River LR43F-0.2-4F	c1930	LR05	riveted steel Warren pony truss w/alt. verticals	37'	1	9
Larimer	Bridge over Big Thompson River LR9E-0.4-5402	1927	T.J. Patterson LR06	riveted steel Camelback pony truss	78'	1	28
Larimer	Saint Louis Avenue Bridge LR13C-0.1-S402	1922	LR07				bridge removed
Larimer	Bridge over Larimer County Canal LR13-0.0-54	c1930	LR08	timber/steel Kingpost pony truss	32'	1	18
Larimer	Morraine Avenue Bridge EP-MRNE-THOM	1922	LR09	riveted steel Pratt pony truss	66'	1	18
Larimer	Roosevelt Avenue Bridge LR150-0.8-18	1923	LR10	riveted steel Pratt pony truss	69'	1	18
Larimer	Bridge over Poudre Valley Canal LR15-1.0-60	1925	Denver Steel and Iron Company Denver Co. LR11	riveted steel Pratt pony truss	68'	1	30
Larimer	Bridge over Missouri Canyon Creek LR27-0.1-29	c1930	LR12	steel deck girder	40'	1	3

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Larimer	Bridge over Handy Ditch LR20-0.2-29	c1940		steel deck girder	28'	I 3	
Larimer	Bridge over Exchange Ditch LR13E-0.3-24E	1937	Works Projects Administration	semicircular rubble arch w/tilted haunches	9'	2 25	
Larimer	Virginia Dale Bridge LR43F-1.0-S287	LR15*					bridge removed
Larimer	Bridge over Boxelder Creek LR56-1.0-125	LR16					bridge removed
Larimer	Bridge over Poudre River LR63E-12.0-44H	LR17					bridge removed
Larimer	County Fairgrounds Bridge	1915	G.E. Washburn	riveted steel Pratt through truss	96'	1 40	
Larimer	Bridge over Big Thompson River C-15-I	1937	M.E. Carlson	riveted steel Camelback pony truss	100'	1 28	
Larimer	Bridge over Big Thompson River C-15-J	1937	M.E. Carlson	riveted steel Camelback pony truss	100'	1 28	
Larimer	Bridge over Big Thompson River C-16-AA	1933	Lawrence Construction Company	riveted steel Camelback pony truss	100'	1 28	
Larimer	Bridge over Big Thompson River C-16-Z	1933	Lawrence Construction Company	riveted steel Camelback pony truss	100'	1 28	
Larimer	Bridge over Larimer County Canal B-16-Q	1931	Blanchard Brothers Construction Company	riveted steel Camelback pony truss	100'	2 30	
Larimer	Bridge over Poudre River B-14-A	1924	Larimer County road crew	riveted steel Pratt pony truss	60'	1 16	
Larimer	Bridge over Poudre River B-14-B	1928	Denver Steel and Iron Company Denver Co.	riveted steel Camelback pony truss	70'	1 32	
Larimer	Bridge over Poudre River B-16-AA	1930	F.C. Dreher Construction Company	riveted steel Camelback pony truss	100'	2 30	
Larimer	Bridge over Poudre Valley Canal B-16-AS	1927	Denver Steel and Iron Company Denver Co.	riveted steel Camelback pony truss	80'	1 28	
Larimer	Baldwin Tunnel B-15-E	1916	Convict work crew	mountain tunnel	95'	1 36	
Las Animas	Linden Avenue Bridge TP-18-A	1912	Patterson-Burghardt Construction Company	riveted steel Pennsylvania through truss	219'	2 45	good early long-span example of type
Las Animas	Bridge over Burro Canon Creek LA53.5-27-10-35	c1910		pinned steel Pratt through truss	90'	1 7	
Las Animas	Bridge over Reilly Canon Creek LA57.7-29-11-37	LS01*	LS02	riveted steel Pratt pony truss	60'	1 6	
Las Animas	Bridge over San Francisco Creek LA105.5-50-8-84	c1925		riveted steel Pratt pony truss	50'	1 3	
Las Animas	Bridge over San Francisco Creek LA105.5-50-9-83	c1930	LS04	riveted steel Pratt pony truss	50'	1 3	
Las Animas	Bridge over San Francisco Creek LA105.5-50-9-83	LS05		riveted steel Pratt pony truss			

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Las Animas	Leitendorfer Arroyo Bridge LA79-40-18-60	1914 LS06*	Trinidad Foundry and Machine Company Trinidad Co.	pinned/rigid Avery pony truss	40' 1	58	█ one of only two examples of patented truss type
Las Animas	Elson 8bridge LA36-41-18-62	1905 LS07*	Pueblo 8bridge Company Pueblo Co.	pinned steel Pratt through truss	150' 1	42	█ good early example of common truss type
Las Animas	Purgatoire Canon Bridge LA143-70-26-103	1929 LS08*	Colorado Interstate Gas Company Denver Co.	pinned steel Pratt through truss	110' 2	42	
Las Animas	Bridge over Apishapa River LA41.6-22-22-16	c1915 LS09*	Trinidad Foundry and Machine Company Trinidad Co.	pinned/rigid Avery pony truss	40' 1	58	█ one of only two examples of patented truss type
Las Animas	8bridge over Navricio Creek LA43.7-25-26-23	c1935 LS10		riveted steel Pratt pony truss	60' 1	6	
Las Animas	Bridge over Arroyo Feeder LA75-38-17-S2	c1920 LS11					bridge removed
Las Animas	Weston 8bridge LA31.9-17-10-6	c1915 LS12		pinned steel Pratt half-hip pony truss	70' 1	18	
Las Animas	8bridge over Timpanogos River LA121-61-42-118	c1920 LS13		riveted steel Pratt pony truss	40' 1	3	
Las Animas	Bridge over Rito Seco Creek LA8.8-54-5-92	c1925 LS14		riveted steel Pratt pony truss	50' 1	3	
Las Animas	8bridge over Wet Canon Creek LA15.7-17-10-2	c1930 LS15		steel through girder	50' 1	8	
Las Animas	8bridge over Del Agua Creek LA52-33-26-45	c1935 LS16		steel through girder	43' 1	3	
Las Animas	8bridge over Reilly Canon Creek LAS1-26-15-20	c1940 LS17		steel through girder	50' 1	8	
Las Animas	8bridge over Trementina Creek LA131-67-10-102	1936 LS18	Works Projects Administration	semicircular rubble arch	29' 1	28	
Las Animas	8bridge over Model Ditch LA79-40-19-59	c1915 LS19*	John A. Laughlin Trinidad Co.	reinf. concrete through girder	40' 1	50	
Las Animas	Commercial Street Bridge TP-18-8	1905 LS20*	Marsh Bridge Company Des Moines Io.	segmental reinf. concrete Luten arch	70' 2	61	█ earliest example of type; regionally important bridge
Las Animas	8bridge over Purgatoire River LA75.1-41-18-61	1912 LS21	Gaudio Bulgaroni Trinidad Co.	segmental reinf. concrete filled spandrel arch	40' 1	33	
Las Animas	Bridge over Trementina Creek LA6.8-69-2-124	1936 LS22	Works Projects Administration	semicircular rubble arch	20' 1	26	
Las Animas	8bridge over Road Canon Creek LA40.2-31-23-0	1912 LS23*	Gaudio Bulgaroni Trinidad Co.	segmental reinf. concrete filled spandrel arch	46' 1	33	
Las Animas	8bridge over Purgatoire River LA24.6-39-12-49	1911 LS24	Carlo Gandolla Trinidad Co.	semicircular reinf. concrete filled spandrel arch	25' 1	33	
Las Animas	8bridge over Rito Agua Dulce LA22-S4-11-89	c1930 LS25		riveted steel Pratt pony truss	37' 1	3	
Las Animas	8bridge over Rito Axul Creek LA4.4-59-2-95	c1925 LS26		riveted steel Camelback pony truss	80' 1	8	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATG.	COMMENTS
Las Animas	Bridge over Christian Canon Creek LA121-59-45-116 LS27	c1945		welded steel pipe Pratt pony truss	42'	1 1	
Las Animas	Bridge over Purgatoire River LA18.3-2B-9-36 LS28	c1920	Midwest Steel and Iron Works (fabricator)	riveted steel Camelback pony truss	75'	2 32	
Las Animas	Cedar Street Bridge LS29*	1901	American Bridge Company Lassig Branch Lassig Il.	pinned steel through truss w/ through girder app.	125'	1 51	
Las Animas	Bridge over San Francisco Creek P-20-E LS30	1926	Domenic Leane (mover) m1947	riveted steel Parker pony truss	100'	1 37	
Las Animas	Bridge over Trinchera Creek P-20-G LS31	1922	Domenic Leane (mover) m1948	riveted steel Parker through truss	150'	1 13	
Las Animas	Bridge over Purgatoire River O-19-H LS32	1937	Southern Colorado Construction Company	riveted steel Camelback pony truss	100'	1 28	
Las Animas	Bridge over Purgatoire River P-17-H LS33	1912	Gaudio Bulgaroni Trinidad Co.	segmental reinf. concrete filled spandrel arch	45'	1 33	
Las Animas	Bridge over Burro Canon P-18-L LS34*	1936	Works Projects Administration	multiplate rubble arch w/stilted haunches	17'	3 50	■ best example of type in survey
Logan	Bridge over Unnamed Ditch LOG52-67.0-150 L001	c1920		steel deck girder	31'	1 3	
Logan	Bridge over Sterling Canal L0634-35.1-B4 L002	c1920		riveted steel Warren pony truss w/alt. verticals	50'	1 7	
Mesa	Black Bridge MESA-25.3-3-B.9 MEO1*	1891	Kansas City Bridge and Iron Company Kansas City Mo.	pinned steel Pratt through truss	217'	1 57	■ excellent long-span early example of type
Mesa	Bridge over Hunter Wash MESA-J-20.B ME02	c1940		riveted steel Pratt through truss	125'	1 14	
Mesa	Bridge over Roan Creek MESA-44-V.6 ME03	c1930		riveted steel Pratt pony truss	80'	1 8	
Mesa	Cameo Bridge MESA-1.9-39.4 ME04	c1940		riveted steel Camelback and Pratt pony trusses	100'	4 12	
Mesa	Bridge over Govt. Highline Canal MESA-H-27.01 ME05	1926		steel deck girder	47'	1 3	
Mesa	Bridge over Plateau Creek MESA-60.5-P.B ME06	c1945		steel deck girder	40'	1 1	
Mesa	Bridge over Colorado River G-04-A ME07	1945	A.S. Horner	riveted steel Parker through truss	200'	2 33	
Mesa	Bridge over D&RGW Railroad H-02-N ME08	1939	Gerard Knutson	riveted steel Pennsylvania through truss	150'	1 32	
Mesa	Fifth Street Bridge H-02-H ME09*	1933	Wisconsin Bridge and Iron Company	riveted steel Parker through truss	185'	4 50	■ important early highway truss
Mesa	Fruita Bridge ME10*	1907	M.J. Patterson Bridge Company Denver Co.	pinned steel Parker through truss	155'	3 71	■ older of two examples of type; early State Bridge
Mineral	Sevenmile Bridge M-09-D MI01	1935		riveted steel can-tilted Pratt deck truss	110'	3 34	■ determined eligible for NRHP in 1981

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Mineral	Bridge over Rio Grande River MIN430-0.1-1	c1930 M102		riveted steel Camelback pony truss	100'	1 8	
Mineral	Bridge over Rio Grande River MIN806-0.8-04	c1930 M103					bridge removed
Mineral	Bridge over Rio Grande River MIN430A-0.4-2	c1930 M104		riveted steel Pratt pony truss	76'	2 8	
Mineral	Bridge over Pass Creek N-09-C	1935 M105		segmental reinf. concrete filled spandrel arch	60'	1 24	
Moffat	Juniper Springs Bridge MOF53-08.35	1906 m1932 MF01*	Charles G. Sheely Construction Company Denver Co.	pinned steel Pratt through truss	128'	2 46	
Moffat	Two Bar Bridge	c1910 m1961 MOF10-26.09		pinned steel Pratt through truss	124'	1 10	
Moffat	Roubideaux Bridge	1920 MOF129-00.13	Monarch Engineering Company Denver Co. MF03	riveted steel Camelback pony truss	80'	1 30	
Moffat	Slater Bridge	1920 MOF1-00.39	Monarch Engineering Company Denver Co. MF04	riveted steel Camelback pony truss	80'	1 30	
Moffat	Lily Park Bridge	c1910 m1959 MOF25-00.3		pinned steel Pratt through truss	112'	2 13	
Moffat	Dowden Bridge	1914 MOF18S-01.00	A.L. Greenburg Iron Company (fabricator) Terra Haute In. MF06	riveted steel Pratt half-hip pony truss	66'	1 36	
Moffat	Bridge over Little Snake River MOF4N-00.84	c1925 MF07		riveted steel Pratt through truss	125'	1 10	
Moffat	Maybell Bridge	c1935 MOF19-01.19	purchased from Wyoming State Highway Depart- ment MF08	riveted steel Warren pony truss w/vert. and poly.	100'	2 21	
Moffat	Bridge over Slater Creek MOF1-01.42	c1935 MF09		steel through girder	30'	1 3	
Moffat	Bridge over South Williams Fork MOF65-00.78	c1930 MF10		steel deck girder	47'	1 3	
Moffat	First Street Bridge	c1940 MOF1STST-00.25		steel through girder	77'	1 8	
Moffat	Bridge over Williams Fork MOF37-00.31	c1940 MF12		steel through girder	79'	1 8	
Moffat	Bridge over Fortification Creek MOFSTCKDR-00.11	c1940 MF13		steel deck girder	66'	1 8	
Moffat	Bridge over Slater Creek MOF1-01.11	c1940 MF14		steel deck girder	30'	1 3	
Moffat	Bridge over Williams Fork MOF47-00.13	c1940 MF15		steel through girder	41'	1 3	
Moffat	Government Bridge	1912 MOF17-13.35	M.F. Levy Construction Company Denver Co. MF16*	pinned steel Pratt through truss	100'	2 38	
Moffat	Bridge over Yampa River B-04-A	1932 MF17	J. Fred Roberts & Sons Denver Co.	riveted steel Parker through truss	125'	2 33	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS FT.	COMMENTS
Hoffat	Bridge over Yampa River 8-06-C	1926	Northwestern Construction Company MF18	riveted steel Pratt through truss	125' 2 34	
Montezuma	Fourth Street Bridge 0335.01	1916	Missouri Valley Bridge and Iron Company Leavenworth Ks.	pinned steel Pratt through and rigid Warren pony truss	100' 2 36 69'	
Montezuma	Bridge over Mancos River 083003901.90005	c1925	MN02	riveted steel Pratt pony truss	60' 1 6	
Montezuma	Bridge over McElmo Creek 083000G11.90014	1929	Denver Steel and Iron Company Denver Co. MN03	riveted steel Camelback pony truss	100' 1 30	
Montezuma	Spruce Street Bridge 083004100.20003	c1930	MN04	riveted steel Pratt pony truss	50' 1 3	
Montezuma	Bridge over McElmo Creek 083000J00.10012	c1920	MN05	riveted steel Pratt through truss	100' 1 7	
Montezuma	Grand Avenue Bridge 0-03-J	1936	Wood/Morgan/Burnett MN06	riveted steel Camelback pony truss	80' 1 28	
Montrose	Bridge over Uncompahgre River 085003001.40054	c1925	M001	riveted steel Pratt pony truss	70' 1 6	
Montrose	Bridge over San Miguel River 085014000.40012	c1925	M002	riveted steel Pratt pony truss	63' 1 6	
Montrose	Bridge over South Canal 085006805.80019	c1925	M003	riveted steel Pratt pony truss	70' 1 6	
Montrose	Bridge over Cimarron River; 085006901.80029	1917	M004	riveted steel Pratt pony truss	62' 1 22	
Montrose	Bridge over San Miguel River; 085004A00.50013	1929	Denver Steel and Iron Company Denver Co. M005	riveted steel Camelback pony truss	80' 1 30	
Montrose	Bridge over Uncompahgre River 085041800.30023	c1930	M006	riveted steel Pratt pony truss	60' 1 6	
Montrose	Bridge over San Miguel River 085090A07.00014	c1910	M007	pinned steel Pratt pony truss	74' 1 12	
Montrose	Bridge over Uncompahgre River 085006700.40020	c1930	M008	riveted steel Pratt pony truss	70' 1 6	
Montrose	Bridge over Paradox Creek 085010700.70001	c1930	M009	riveted steel Pratt pony truss	60' 1 6	
Montrose	Bridge over San Miguel River 085007900.00004	c1930	M010	riveted steel Pratt pony truss	68' 1 6	
Montrose	Bridge over South Canal 085006700.90017	c1930	M011	riveted steel Pratt pony truss	70' 1 6	
Montrose	Bridge over San Miguel River 085011000.00002	c1920	M012	riveted steel Pratt through truss	143' 1 17	
Montrose	Bridge over M&O Canal 085000703.10021	c1920	M013	steel through girder	37' 1 3	
Montrose	Bridge over M&D Canal 085041A01.60024	c1930	M014	steel deck girder	32' 1 3	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO.	COMMENTS
Montrose	Bridge over Loutenheizer Wash J-05-J M015	1935	Babb and Thorkildsen	riveted steel Camelback pony truss	100'	1 28	
Montrose	Bridge over Uncompahgre River K-05-M M016	1936	Ed Selander	riveted steel Camelback pony truss	100'	1 28	
Montrose	Bridge over Dolores River K-01-C M017	1952	Gardner Construction Company	riveted steel Pennsylvania through truss	125'	1 23	
Morgan	Prewitt Bridge MG88-0.0-36 MR01*	1912	Patterson-Burghardt Construction Company Denver Co.	riveted steel Pratt pony truss	48'	1 31	
Morgan	Prewitt Bridge MG36-0.7-AA MR02*	1912	Patterson-Burghardt Construction Company Denver Co.	riveted steel Pratt pony truss	57'	1 33	
Morgan	Rainbow Arch Bridge C-21-C MR03*	1922	Colorado Bridge and Construction Company Denver Co.	reinf. concrete fixed Marsh arch	90'	11 82	■ only example in survey; perhaps longest in world
Otero	Pringle Street Bridge LJ-PRINGLE ST OT01	c1920		riveted steel Camelback pony truss	80'	1 8	
Otero	Fifth Street Bridge LJ3-FIFTH ST. OT02	1915	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	54'	2 32	
Otero	Smith Hollow Bridge OT-10-9-31.5-26 OT03*	1907	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt through truss	100'	1 35	
Otero	Bridge over Timpas Creek OT-23-22-24-125 OT04*	1907	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt pony truss	85'	1 42	
Otero	Swink Bridge OT245-24-26-138 OT05*	1921	Pueblo Bridge Company Pueblo Co.	pinned steel Camelback through truss	148'	2 60	■ determined eligible for NRHP in 1983
Otero	Bridge over Crooked Arroyo OT-21-20-16-111 OT06	1924	Pueblo Bridge Company Pueblo Co.	riveted steel Camelback pony truss	80'	1 32	
Otero	Apishapa Bridge OTHH.5-4-30-018 OT07*	1911	Pueblo Bridge Company Pueblo Co.	semicircular reinf. concrete filled spandrel arch	57'	2 44	
Otero	Timpas Bridge OT-N-15.5-12-59 OT08*	1923	Pueblo Bridge Company Pueblo Co.	riveted steel Pratt through truss	120'	1 31	
Otero	Bridge over Fort Lyon Storage Canal OT-25-24-30-142 OT09	c1920		riveted steel Camelback pony truss	100'	1 8	
Otero	Bridge over Fort Lyon Canal OT-33-32-27-198 OT10*	1917	Pueblo Bridge Company Pueblo Co.	riveted steel Camelback pony truss	75'	1 30	
Otero	Bridge over Nine Mile Canal OT-804-34-7-209 OT11	c1925		riveted steel Camelback pony truss	80'	1 8	
Otero	Bridge over Fort Lyon Storage Canal OT-36-35-39-218 OT12	c1925		riveted steel Camelback pony truss	75'	1 6	
Otero	Bridge over Apishapa River L-21-8 OT13	1925	Lee F. Williams	riveted steel Parker through truss	150'	1 32	
Otero	Bridge over Apishapa River M-20-C OT14	1937	Midwest Steel and Iron Works (fabricator)	riveted steel Camelback pony truss	100'	1 28	
Otero	Bridge over Timpas Creek M-22-G OT15	1938	Denver Steel and Iron Company Denver Co.	riveted steel Camelback pony truss	100'	1 32	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATG.	COMMENTS
Otero	AT&SF Railroad Bridge L-22-H	1928 OT16	Brown Construction Company	steel railroad through girder	40'	1 21	
Otero	Bridge over Catlin Canal L-22-AP	1936 OT17	Denver Steel and Iron Company (fabricator)	steel deck girder	40'	1 19	
Otero	Bridge over Fort Lyon Canal L-22-K	1934 OT18	M.E. Carlson	steel through girder	70'	1 26	
Ouray	Dexter Creek Bridge OUR14A-0.0-05	1899 OU01*	Missouri Valley Bridge and Iron Works Leavenworth Ks.	pinned steel Pratt pony truss	50'	1 41	
Ouray	Bachelor-Switch Dallas Bridge OUR24-0.1-7	1900 OU02*	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt pony truss	70'	1 40	good early example of common truss type
Ouray	Red Mountain Bridge OUR31-0.1-08	c1900 OU03		pinned steel Pratt pony truss	60'	1 15	
Ouray	Bridge over Uncompahgre River OUR3A-0.7-02	c1920 OU04		riveted steel Pratt pony truss	60'	1 6	
Ouray	County Line Bridge OUR906-0.2-10	OU05					bridge removed
Ouray	Bridge over Cow Creek OUR8-4.4-03	c1930 OU06		steel deck girder	45'	1 7	
Ouray	Bridge over Uncompahgre River K-05-E	1937 OU07	H.L. Gardner	riveted steel Camelback pony truss	100'	1 28	
Ouray	Bridge over Canon Creek M-06-AB	1935 OU08		steel deck girder	30'	1 5	
Ouray	Bridge over Uncompahgre River L-06-L	1936 OU09		steel deck girder	49'	1 5	
Ouray	Million Dollar Highway Tunnel L-06-P	1921 OU10		mountain tunnel	200'	1 36	
Park	Bellford Mountain Heights Bridge PABHI-0.1-S285	c1905 PA01		steel deck girder	31'	1 9	
Park	Glenisle Bridge PAGL4-S0.0-S285	1902 PA02	M.J. Patterson Bridge Company Denver Co.	steel deck girder	31'	1 35	
Pitkin	Gerbaz Bridge PIT-021-00.2	c1925 PI01		riveted steel Pratt pony truss	60'	2 10	
Pitkin	Smith Bridge PIT-020-00.3	1917 PI02	Missouri Valley Bridge and Iron Company Leavenworth Ks.	riveted steel Pratt pony truss	64'	1 32	
Pitkin	Roaring Fork Bridge PIT-017-00.1	1937 PI03	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	66'	1 30	
Pitkin	Bridge over Snowmass Creek PIT-009-01.2	c1920 PI04		steel through girder	60'	1 8	
Pitkin	Midnight Mine Bridge PIT-15A-00.2	c1920 PI05		steel through girder	50'	1 8	
Pitkin	Bridge over Roaring Fork River G-08-I	1938 PI06	Henry Shore	riveted steel Pennsylvania through truss	125'	1 31	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS (FT.)	COMMENTS
Pitkin	Maroon Creek Bridge H-09-E	c1888 P107*	Colorado Midland RR Track Crew	multiple-span steel railroad trestle	651' 20 72 tot.	oldest and longest railroad trestle in survey
Pitkin	Sheely Bridge P108*	1911	Charles G. Sheely Construction Company Denver Co.	riveted steel Pratt through truss	85' 1 37	oldest riveted Pratt through truss in survey
Prowers	Bridge over North Butte Creek PR21-20-6.1-77	1922 PR01	Denver Steel and Iron Company Denver Co.	riveted steel Pratt pony truss	60' 1 28	
Prowers	Bridge over Buffalo Canal PRJJ-26.5-31-57	c1925 PRO2		riveted steel Pratt pony truss	55' 1 3	
Prowers	Bridge over Amity Canal PR13-12-33.9-39	c1925 PRO3		riveted steel Pratt pony truss	55' 1 3	
Prowers	Bridge over Amity Canal PR6-5.0-32.5-12	c1925 PRO4		riveted steel Pratt pony truss	55' 1 3	
Prowers	Bridge over Amity Canal PR85-75-32.9-27	c1875 PRO5*	Atchison Topeka and Santa Fe Railroad	pinned iron skewed Warren pony truss	48' 1 42	
Prowers	Bridge over Amity Canal PRPP-22.6-36-51	c1940 PRO6		reinf. concrete rigid frame	12' 2 9	
Prowers	Bridge over North Butte Creek PR16-15-7.8-78	1936 PRO7	Works Projects Administration	semicircular rubble arch	12' 2 23	
Prowers	Bridge over Two Butte Creek PR20-20-6.1-86	1936 PRO8	Works Projects Administration	semicircular rubble arch w/stilted haunches	12' 3 24	
Prowers	Douglas Crossing Bridge PR28-27-10.4-88	1936 PRO9*	Works Projects Administration	semicircular rubble arch w/stilted haunches	14' 6 50	best example of WPA masonry bridge in survey
Prowers	Bridge over Cat Creek PR3-2-12.2-74	1936 PRO10	Works Projects Administration	semicircular rubble arch w/stilted haunches	12' 2 24	
Pueblo	Nepesta Bridge PUCO 0.98-601F	1905 PU01*	Pueblo Bridge Company Pueblo Co.	pinned steel Pratt through truss	106' 2 49	excellent early example of type
Pueblo	Union Avenue Bridge PUEUNIN-0.0-COR	1927 PU02		riveted steel Warren deck truss w/ alt. verticals	124' 2 34	
Pueblo	Main Street Viaduct PUEMAIN-0.1-COR	1928 PU03	Pueblo Bridge Company Pueblo Co.	riveted steel Parker and Pratt ponies w/girders	156' 3 36 120' tr.	
Pueblo	Bridge over Bighorn Creek PUCO 0.16-305A	c1925 PU04		riveted steel Pratt pony truss	80' 1 8	
Pueblo	Nyberg Bridge PUCO 0.24-404A	1922 PU05*	Karl Burghardt	riveted steel Parker through truss	180' 1 41	
Pueblo	Bridge over Greenhorn Creek PUCO 0.07-216A	c1930 PU06		riveted steel Pratt deck truss	70' 1 9	
Pueblo	Bridge over St. Charles River PUCO 15.50-211C	c1930 PU07		riveted steel Warren pony truss	63' 1 12	
Pueblo	Nicholson Bridge PUCO 1.17-407A	1923 PU08*	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	89' 3 45	
Pueblo	Avondale Bridge PUCO 0.42-409B	1913 PU09*	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	89' 3 49	excellent example of type

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATIO	COMMENTS
Pueblo	Beulah Bridge PUCO 0.01-208G	1916 PU10	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	25'	1 37	
Pueblo	Beulah Bridge PUCO 0.04-2080	1916 PU11	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	24'	1 37	
Pueblo	Bridge over South Creek PUCO 0.12-208E	c1920 PU12		segmental rubble arch	25'	1 8	
Pueblo	Beulah Bridge PUCO 0.38-208B	1916 PU13	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	27'	1 37	
Pueblo	St. Charles Bridge PUCO 0.16-407B	1924 PU14*	Salle Construction Company Pueblo Co.	segmental reinf. concrete Luten arch	91'	3 50	■ excellent example of type; latest example of type
Pueblo	Bridge over St. Charles River L-19-C	1942 PU15	Frank M. Kenney	riveted steel Parker through truss	150'	1 26	
Pueblo	Bridge over Arkansas River K-18-R	1924 PU16	Pueblo Bridge Company Pueblo Co.	riveted steel Pennsylvania through truss	280'	1 38	
Pueblo	Bridge over Bob Creek Ditch L-19-G	1929 PU17	Kansas City Steel Company Kansas City Mo.	steel deck girder	43'	1 13	
Pueblo	Bridge over Brantzell Arroyo L-1B-BX	1930 PU18		segmental reinf. concrete filled spandrel arch	25'	1 25	
Pueblo	Huerfano Bridge L-19-B	1921 PU19*	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	80'	5 56	■ excellent example of type; regionally important crossing
Pueblo	Bridge over Rocky Ford Highline Canal L-20-8	1932 PU20	Phelps Brothers	segmental reinf. concrete filled spandrel arch	65'	1 32	
Rio Blanco	Tenth Street Bridge MKR-TENTH ST	c1920 m1931 RB01		riveted steel Pennsylvania through truss	125'	1 9	
Rio Blanco	Bridge over South Fork of White River R10B-017-42.27	c1930 RB02		riveted steel Pratt pony truss	65'	1 6	
Rio Blanco	Hay's Ranch Bridge R10B-127-00.40	1900 RB03*	M.J. Patterson Bridge Company Denver Co.	pinned steel Pratt pony truss w/bowed top chord	92'	1 71	■ unique Pratt sub- type; important early State Bridge
Rio Blanco	Bridge over South Fork of White River R10B-010-07.27	c1930 RB04		riveted steel Warren pony truss w/ alt. verticals	60'	1 10	
Rio Blanco	Bridge over North Fork of White River R10B-017-43.49	c1930 RB05		riveted steel Pratt pony truss	48'	1 3	
Rio Blanco	Bridge over White River R10B-010-00.08	c1930 RB06		riveted steel Camelback pony truss	80'	1 8	
Rio Blanco	Bridge over North Fork of White River R10B-012-00.08	c1930 RB07		riveted steel Camelback pony truss	80'	1 8	
Rio Blanco	Bridge over North Fork of White River R10B-014-00.23	c1930 RB08		riveted steel Pratt pony truss	82'	1 8	
Rio Blanco	Bridge over White River R10B-004-06.76	c1935 RB09		riveted steel Camelback pony truss	100'	1 8	
Rio Blanco	Bridge over White River R10B-073-00.23	c1940 RB10		riveted steel Pratt pony truss	115'	1 8	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATG.	COMMENTS
Rio Blanco	Bridge over White River RIOB-023-00.00	c1940	RB11	riveted steel Camelback pony truss	125'	1 8	
Rio Blanco	Bridge over White River RIOB-054-00.06	c1940	RB12	riveted steel Camelback pony truss	100'	1 8	
Rio Blanco	Bridge over White River RIOB-065-00.09	c1930	RB13	timber/steel Howe pony truss	37'	1 24	
Rio Blanco	Bridge over North Fork of White River RIOB-12A-01.80	c1940	RB14	riveted steel Pratt half-hip pony truss	70'	1 12	
Rio Blanco	Bridge over White River	1926	Monarch Engineering Company Denver Co. R815	riveted steel Pratt pony truss	90'	1 24	
Rio Blanco	Bridge over White River 0-05-1	1936	Henry Shore RB16	riveted steel Camelback pony truss	100'	2 30	
Rio Grande	Bridge over Rio Grande Canal RGD023-00.70	c1925	RG01	riveted steel Pratt pony truss	60'	1 6	
Rio Grande	Bridge over Rio Grande River RG0018-00.30	c1930	RG02	riveted steel Camelback pony truss	100'	1 8	
Rio Grande	Masonic Park Bridge RGDMP-00.10	1909 m1933	Pueblo Bridge Company Pueblo Co. RG03*	pinned steel skewed Pratt through truss	113'	1 33	█ only skewed pinned through truss in survey
Rio Grande	State Bridge RGD017-00.90	1907	Denver Bridge Company Denver Co. RG04*	pinned Pratt through and rigid Pratt pony truss	125' 45'	2 46	█ rare combination of spans; important early State Bridge
Rio Grande	Gerrard Bridge RGD019-00.00		RG05				bridge removed
Rio Grande	Bridge over Rio Grande River N-10-H	1936	F.M. Kenney RG06	riveted steel Camelback pony truss	100'	2 30	
Rio Grande	Wheeler Bridge RG07*	1924		rigid timber/ steel Howe pony truss	55'	2 42	█ best example of timber pony truss in survey
Rio Grande	Seven Mile Plaza Bridge RG08	1911	Pueblo Bridge Company Pueblo Co.	segmental reinf. concrete Luten arch	100'	1 42	
Rio Grande	Off Bridge RG09	1928		rigid timber Warren pony truss w/ polyg. chord	50'	2 36	
Rio Grande	Sutherland Bridge RG10	1924		rigid timber Warren pony truss w/ polyg. chord	50'	2 36	█
Routt	Fifth Street Bridge 1250.07	c1930 R001		riveted steel Camelback pony truss	100'	1 8	
Routt	Thirteenth Street Bridge 1250.08	c1930 R002		riveted steel Camelback pony truss	100'	1 8	
Routt	Four Mile Bridge 107G04200.90045	1900 R003	Wrought Iron Bridge Company Canton Oh.	pinned steel Pratt through truss	119'	1 43	█ excellent early example of type by important builder
Routt	Carver Bridge 107004403.80037	c1920 R004		riveted steel Camelback pony truss	88'	1 12	
Routt	Gilroy Bridge 107001400.30004	c1920 R005		riveted steel Warren pony truss w/alt. vert. & pol.	72'	1 20	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATINGS	COMMENTS
Routt	Bartholomew Bridge 107002200.40001 R006	c1920		riveted steel Warren pony truss w/alt. vert. & post.	100'	1 22	
Routt	Bridge over Elkhead Creek 107007605.40049 R007	c1930		riveted steel Warren pony truss w/ alt. verticals	50'	1 6	
Routt	Bridge over Mad Creek 107012905.40012 R008						bridge removed
Routt	Tellier's Bridge 107033A00.30006 R009	c1930		riveted steel Camelback pony truss	90'	1 8	
Routt	Stockridge Bridge 107033C00.10040 R010	c1940 mc1965		riveted steel Warren deck truss	100'	1 25	
Routt	Bridge over Elk River 107006200.40013 R011						bridge removed
Routt	Bridge over Elk River 107005401.30015 R012	c1930		steel deck girder	51'	1 8	
Routt	Bridge over Trout Creek 107017901.30007 R013	c1930		steel through girder	56'	1 8	
Routt	Bridge over Yampa River 107018A00.30048 R014	c1935		steel through girder	41'	1 3	
Routt	Bridge over Elk River 107005800.40017 R015	c1945		riveted steel Camelback pony truss	74'	1 4	
Routt	Bridge over Yampa River C-08-A	1933 R016	Gordon and Horner	riveted steel Camelback pony truss	100'	3 31	
Routt	Bridge over Walton Creek C-09-H	1931 R017	H.C. Lallier Construction Company	riveted steel Camelback pony truss	100'	1 28	
San Juan	Bridge over Animas River SJH02-01.9	c1920 SJ01		riveted steel Pratt pony truss	66'	1 6	
San Miguel	Bridge over Disappointment Creek SMG16R-1.8-11	c1920 SM01		riveted steel Pratt pony truss	56'	1 3	
San Miguel	Bridge over San Miguel River SMG60M-0.1-23	c1930 SM02		riveted steel Pratt pony truss	44'	1 3	
San Miguel	Bridge over San Miguel River SMGM44-15.4-6	c1935 SM03		riveted steel Warren pony truss	74'	1 16	
San Miguel	Bridge over Goodenough Gulch L-04-U	1939 SM04	A.S. Horner	reinf. concrete rigid frame	40'	1 25	
Sedgwick	Bridge over Settlers Ditch SE07-26.1-5A	c1925 SE01		steel deck girder	30'	1 3	
Sedgwick	Bridge over Highline Canal SE05-26.6-05	c1925 SE02		steel through girder	30'	1 3	
Sedgwick	Bridge over Unnamed Ditch SE022.9-5.0-198	1922 SE03		reinf. concrete rigid frame	27'	1 21	
Sedgwick	Bridge over Union Pacific RR A-27-0	1934 SE04	J.H. and N.H. Monaghan and Krantz Construction Company	steel deck girder	50'	1 16	

# BRIDGE INVENTORY

COLORADO BRIDGE SURVEY

COUNTY	BRIDGE NAME	DATE	CONTRACTOR	BRIDGE TYPE	LENGTH SPANS	RATG.	COMMENTS
Summit	Slate Creek Bridge 117145000.40005 SU01*	1924	Rogers and Pickard	riveted steel Parker pony truss	100' 1	53	■ excellent example of uncommon truss type
Summit	Bridge over Blue River 117190000.40001 SU02	c1930		modified steel Warren pony truss w/verticals	40' 1	3	
Teller	Midland Terminal Railroad Tunnel I-16-M TE01	1895		mountain tunnel	442' 1	56	
Washington	Prewitt Bridge WTN57-57.40 WA01*	1912	Patterson-Burghardt Construction Company Denver Co.	riveted steel Pratt pony truss	63' 1	34	
Washington	Prewitt Bridge WTNP-57.40 WA02*	1912	Patterson-Burghardt Construction Company Denver Co.	riveted steel skewed Pratt pony truss	50' 1	31	
Washington	Bridge over Plumbush Creek F-22-F WA03	1938	Peter Kiewett Sons Company	segmental reinf. concrete filled spandrel arch	58' 1	26	
Washington	Bridge over West Plum Creek F-22-B WA04	1938	Peter Kiewett Sons Company	segmental reinf. concrete filled spandrel arch	58' 1	26	
Weld	Bridge over Little Thompson Riv. WEL003.0-042.0A WE01	c1935		riveted steel Pratt pony truss	80' 1	8	
Weld	Fifth Street Bridge GREELEY-0000011 WE02	1907	Charles G. Sheely Construction Company Denver Co.	reinf. concrete slab-and-girder	48' 3	40	
Weld	Bridge over Larimer and Weld Canal WEL078.0-013.0A WE03	c1940		riveted steel Warren pony truss w/alt. verticals	63' 1	10	
Weld	Bridge over Little Thompson Riv. WEL007.0-042.0A WE04	c1940		riveted steel Pratt pony truss	80' 1	8	
Weld	Bridge over Little Thompson Riv. WEL015.0-044.0B WE05	c1945		riveted steel Warren pony truss w/verticals	68' 1	12	
Weld	Bridge over Little Thompson Riv. C-17-BN WE06	1938	Gardner Brothers Construction Company	riveted steel Camelback pony truss	100' 1	28	
Weld	Bridge over Lone Tree Creek B-18-H WE07	1941	Ed H. Konnen	reinf. concrete rigid frame	20' 1	21	
Weld	Bridge over Greeley Canal No. 3 C-18-B WE08	1916		reinf. concrete rigid frame	14' 1	25	
Eagle	Brooks Bridge EA15	1934	Denver & Salt Lake Western construction crew	rigid timber Howe through truss	150' 1	43	
Mesa	Bridgeport Bridge ME11	c1930		steel/timber suspension bridge	250' 1	28	
Moffat	Brown's Park Bridge MF19	1928 1953	Stanley Crouse	steel/timber suspension bridge	318' 1	48	■ excellent timber example of bridge type

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# BRIDGE INVENTORY BY COUNTY

COUNTY	ON-SYSTEM	OFF-SYSTEM	FAU	PRIVATE	ABANDONED	COUNTY	ON-SYSTEM	OFF-SYSTEM	FAU	PRIVATE	ABANDONED
Adams	0	3	0	0	0	Lake	1	0	0	0	0
Alamosa	0	0	0	0	1	La Plata	2	13	0	0	1
Arapahoe	1	4	2	0	0	Larimer	9	14	0	0	4
Archuleta	2	2	1	0	0	Las Animas	5	25	4	0	1
Baca	16	8	0	0	0	Lincoln	0	0	0	0	0
Bent	0	5	0	0	0	Logan	0	2	0	0	0
Boulder	2	0	1	0	0	Mesa	3	5	0	1	2
Chaffee	6	8	1	0	0	Mineral	1	3	0	0	1
Cheyenne	0	3	0	0	0	Moffat	2	16	0	0	1
Clear Creek	4	1	0	0	0	Montezuma	1	5	0	0	0
Conejos	2	5	0	0	0	Montrose	3	14	0	0	0
Costilla	0	1	0	0	0	Morgan	1	2	0	0	0
Crowley	1	12	0	0	0	Otero	6	11	1	0	0
Custer	0	0	0	0	0	Ouray	3	5	0	0	1
Delta	2	7	0	0	0	Park	0	2	0	0	0
Denver	3	0	25	0	0	Phillips	0	0	0	0	0
Dolores	0	0	0	0	0	Pitkin	2	5	0	0	1
Douglas	2	2	0	0	1	Prowers	0	10	0	0	0
Eagle	9	2	0	2	3	Pueblo	6	10	4	0	0
Elbert	0	3	0	0	0	Rio Blanco	1	14	0	1	0
El Paso	6	4	4	0	0	Rio Grande	1	4	0	3	2
Fremont	6	43	6	1	4	Routt	2	13	0	0	2
Garfield	2	4	0	0	3	Saguache	0	0	0	0	0
Gilpin	0	0	0	0	0	San Juan	0	1	0	0	0
Grand	3	6	0	0	0	San Miguel	1	3	0	0	0
Gunnison	2	6	0	0	3	Sedgwick	1	3	0	0	0
Hinsdale	0	1	0	0	0	Summit	0	2	0	0	0
Huerfano	3	9	0	0	0	Teller	0	0	0	0	0
Jackson	3	1	0	0	0	Washington	2	2	0	0	0
Jefferson	2	6	1	0	0	Weld	3	4	1	0	0
Kiowa	0	0	0	0	0	Yuma	0	0	0	0	0
Kit Carson	1	1	0	0	0	Total	131	335	51	8	28

# BRIDGE INVENTORY BY TYPE

STRUCTURAL TYPE	TOTAL	EARLIEST	LONGEST
Pinned steel Pratt pony truss	15	OU01 (1899)	OT04 ( 85'0")
Riveted steel Pratt pony truss	94	CA01 (1911)	RB10 (115'6")
Pinned steel Pratt through truss	22	DE01 (1886)	ME01 (217'0")
Riveted steel Pratt through truss	13	PI08 (1911)	GA03 (143'1")
Pinned timber/steel Pratt through truss	1	GA01 (1900)	GA01 (100'0")
Pinned steel salvaged railroad Pratt through truss	3	LS29 (1902)	LS29 (125'0")
Rigid timber Pratt pony truss	1	GU03 (c1930)	GU03 ( 40'0")
Pinned wrought iron Pratt deck truss	1	CA02 (1881)	CA02 ( 80'0")
Riveted steel Pratt deck truss	5	EA06 (1929)	CA10 (125'0")
Pinned steel Pratt pony truss w/ bowed top chord	1	RB03 (1900)	RB03 ( 92'0")
Pinned/riveted steel Pratt pony truss	1	LR04 (1917)	LR04 ( 50'5")
Pinned/riveted steel Pratt through truss	1	AC01 (1913)	AC01 (115'0")
Pinned steel Camelback through truss	4	DL07 (1890)	DL07 (196'0")
Riveted steel Camelback pony truss	90	OT10 (1917)	many (125'0")
Pinned steel Parker through truss	2	ME10 (1907)	GA06 (190'0")
Riveted steel Parker through truss	16	PU05 (1922)	ME07 (200'0")
Pinned steel Parker pony truss	1	CA13 (c1910)	CA13 (103'0")
Riveted steel Parker pony truss	2	SU01 (1924)	SU01 ( 98'6")
Pinned steel Pennsylvania through truss	2	GA06 (1909)	GA06 (240'0")
Riveted steel Pennsylvania through truss	7	CR13 (1911)	CR13 (300'0")
Pinned steel Pratt half-hip pony truss	4	LR01 (1905)	RB14 ( 70'0")
Riveted steel Pratt half-hip pony truss	5	JE02 (1909)	EL01 ( 75'2")
Riveted steel Pratt semi-deck truss	1	FR52 (1929)	FR52 (150'0")
Pinned steel/iron Thatcher through truss	1	CN01 (1892)	CN01 (150'0")
Riveted steel Warren pony truss w/ parallel chords	19	FR16 (1921)	FR16 ( 77'6")
Riveted steel Warren pony truss w/ polygonal chord	6	RO05 (c1920)	FR22 (102'0")
Pinned iron Warren pony truss	1	PR05 (c1875)	PR05 ( 48'0")
Multiple-span steel stringer viaduct	1	DE07 (1889)	OE07 (1467' )
Multiple-span girder/trussed steel viaduct	6	OE03 (1907)	OE03 (4251' )
Riveted steel Warren through truss w/ alt. vert./poly.	1	DL01 (1911)	OL01 (192'0")
Riveted steel double-intersection Warren through truss	1	GA02 (1911)	GA02 (203'0")

# BRIDGE INVENTORY BY TYPE

STRUCTURAL TYPE	TOTAL	EARLIEST	LONGEST
Riveted steel Warren deck truss	3	DE28 (1917)	PU02 (124'0")
Rigid steel/timber Warren pony truss	2	RG10 (1924)	both ( 50'0")
Welded steel pipe pony truss	2	EA01 (c1940)	EA01 ( 90'0")
Rigid timber/steel Kingpost pony truss	1	LRO8 (c1930)	LRO8 ( 32'0")
Riveted steel modified Queenpost pony truss	1	FR20 (c1930)	FR20 ( 47'0")
Pinned timber/iron braced Queenpost pony truss	1	CA12 (1880)	CA12 ( 39'0")
Riveted steel truss leg bedstead	1	CA09 (1909)	CA09 ( 50'0")
Riveted steel military bridge	1	LPO2 (1920)	LPO2 ( 71'5")
Rigid timber/iron Howe through truss	1	EA15 (1890)	EA15 (100'0")
Rigid timber/steel Howe pony truss	2	RG07 (1924)	RG07 ( 55'0")
Pinned/rigid Avery pony truss	2	LS06 (1914)	both ( 40'0")
Riveted steel deck arch	1	EA12 (1940)	EA12 (318'0")
Steel suspension bridge	1	FR58 (1929)	FR58 (880'0")
Steel deck girder	43	DE05 (1899)	EP03 ( 74'0")
Steel open-web deck girder	1	DE06 (1895)	DE06 (122'4")
Steel through girder	26	FR57 (c1910)	NF12 ( 79'6")
Iron railroad deck girder	1	CA05 (1880)	CA05 ( 45'6")
Steel railroad deck girder	15	PI07 (1888)	FR48 ( 69'0")
Steel railroad through girder	5	EP11 (1901)	RO11 ( 57'0")
Reinforced concrete Luten arch	17	LS20 (1905)	RG08 (100'0")
Reinforced concrete filled deck arch	16	FR45 (1908)	OT07 ( 57'0")
Reinforced concrete open-spandrel deck arch	7	DE24 (1908)	DE24 (135'0")
Reinforced concrete fixed Marsh arch	1	MR03 (1922)	MR03 ( 90'0")
Reinforced concrete slab-and-girder	7	WE02 (1907)	CN07 ( 50'0")
Reinforced concrete through girder	1	LS19 (c1915)	LS19 ( 40'0")
Reinforced concrete rigid frame	14	WE08 (1916)	AR04 (100'0")
Reinforced concrete multiple span viaduct	1	DE08 (1924)	DE08 (3590' )
Stone rubble deck arch	31	EP08 (1906)	EP08 ( 21'5")
Stone multiplate deck arch	1	LS34 (1936)	LS34 ( 17'1")
Mountain tunnel	10	FR59 (1894)	JE10 (1068' )

# BRIDGE INVENTORY

BY CONTRACTOR

Bridges bid by contractor  
\* Bridges built by contractor

*Allis, Charles H.	Greenland Colorado	1913
*American Bridge Company	Chicago Illinois	1901
*Babb and Thorkildsen		1935
*Baker, Frank E.		1895
*Bales, N.H.		
*Bales and Robertson		1916
*Barthelson, S.C., Construction Company		1892
*Blanchard Brothers		1931
*Brown, F.C.	Denver Colorado	1913
*Brown Construction Company		1948
Bullen Bridge Company	Pueblo Colorado	1889-1901
Campbell-Flagler Bridge Company		
Campbell, Ernest		1890
*Canton Bridge Company	Canton Ohio	1907
Carlson, M.E.		1934-1937
*Central Construction Company	Colorado Springs Colorado	1912
Central States Bridge Company	Chicago Illinois	
Chicago Bolt and Forge Company		1927
*Christiensen and Ludwig		1936
*Clay and Hallenbeck	Clinton Iowa	
Clinton Bridge and Iron Works	Denver Colorado	1919-1924
*Colorado Bridge and Construction Company		
Colorado Ingot, Iron Pipe and Culvert Co.	Denver Colorado	1929
*Colorado Interstate Gas Company	Portland Colorado	1907
*Colorado Portland Cement Company		
*Colorado Steel Company	Denver Colorado	1895
*Commonwealth Construction Company	Denver Colorado	1914
*Cowell, F.H.		1906
*Delaplane, A.S.	Denver Colorado	
*Denver Bridge Company	Denver Colorado	1905-1926
*Denver Steel and Iron Company	Denver Colorado	1925-1939
*Derby and Jones	Dolores Colorado	1907
*Donaghy, J. Ralph	Colorado Springs Colorado	1922-1923
*Drake, Robert	Omaha Nebraska	1913
*Dreher, F.C., Construction Company	Ft. Collins Colorado	1917-1930
*Driscoll Construction Company		1937
*Edge Moor Bridge and Iron Company	Wilmington Delaware	1880
*Emerick, Charles	Trinidad Colorado	1912-1914
*Engineers Construction Company	Greeley Colorado	1916
*Enrietti, Battista	Trinidad Colorado	1913
*Evans and Bennett	Arvada Colorado	1930-1931
Fansler, N.C.		
*Farlow and Farlow	Ft. Lupton Colorado	1917
*Farnsworth and Blodgett	Denver Colorado	1893

# BRIDGE INVENTORY

BY CONTRACTOR

Bridges bid by contractor  
\* Bridges built by contractor

*Farrell and Ellis	Castle Rock Colorado	1913
*Fiala, A.		1909
*Finger, Jonas		1916- 1918
*Ford, Frank	Littleton Colorado	1913- 1930
*H.M. Fox	Florence Colorado	1924
*Fox and Smith	Florence Colorado	1908- 1916
*Frewen, F.W.	Victor Colorado	1907
*Gale, W. R.	Delta Colorado	1911
*Gandolla, Carlo	Trinidad Colorado	1911
*Gardner Construction Company		1937- 1952
*Gibbens, B.R.		1911
Gilligan, John, and Company	Falls City Nebraska	
*Gordon Construction Company		1934
*Gordon and Horner		
*Greenburg, A.L., Iron Company	Terra Haute Indiana	1916
*Groton Iron and Bridge Company	New York New York	1886
*H&B Machine Company		1909
*Hinman Brothers Construction Company	Denver Colorado	
*Hoffman, H.L.		1927
*Hollister, H.L.		1901
*Honnen, D. H.		1941
*Horner, A.S.	Denver Colorado	1939
*Horner and Switzer	Denver Colorado	1933-1938
*Hostetter, T.J.		
*Howe, B.R.		1914
Illinois Steel Bridge Company	Chicago Illinois	
Jenkins Bridge and Construction Company	Joliet Illinois	
Joliet Bridge Company		
*Jones, Lee H.	Kansas City Missouri	1891-1901
*Kansas City Bridge and Iron Company	Kansas City Missouri	1938
*Kansas City Structural Steel Company		1932
*Kenney, Blanchard		1936-1942
*Kenney, Frank M.		1938
*Kenney, James P.		1923
*Kenney, M.J.		1923
*Kiewett, Peter, Sons Company	Denver Colorado	1938
*King Bridge and Manufacturing Company	Cleveland Ohio	1891
*Krantz Construction Company	Denver Colorado	1934
*Knutsen, Gerard		1939
*Kuyes and Work	Idaho Springs Colorado	1901
*Lallier, H.C., Construction and Eng. Co.	Denver Colorado	1932
*Lambie, C.S., Company	Denver Colorado	1912
*Lambie-Bate Construction Company	Denver Colorado	1926
*Laughlin, John A.	Trinidad Colorado	1915

# BRIDGE INVENTORY

BY CONTRACTOR

Bridges bid by contractor  
\* Bridges built by contractor

*Lawrence Construction Company	Denver Colorado	1933
*Leane, Domenick	Trinidad Colorado	1947-1948
Leavenworth Bridge Company	Leavenworth Kansas	
*Levy, M.F., Construction Company	Denver Colorado	1911-1926
*Lopresto, Antonio	Aguilar Colorado	1913
*Lowdermilk Brothers		1935-1938
*Lumsden, J.J.	Grand Junction Colorado	1913
*Mackey, A.R.		1931
*Madsden, Carl S.	Castle Rock Colorado	1913
*Manhart and Lowell	Des Moines Iowa	1905
*Marsh Bridge Company	Toledo Ohio	
Massillon Bridge and Construction Company	Georgetown Colorado	1891-1907
*Maxwell, Donald		1923-1924
*McCormick and Brockway	Pagosa Springs Colorado	1913
*McCoy, Oscar	Denver Colorado	1917
*McDonald, R.P., Construction Company	Lamar Colorado	1924
*McDowell, H.H.	Kansas City Missouri	1899-1911
*Midland Bridge Company		1932-1933
*Midwest Bridge Company	Milwaukee Wisconsin	1907-1910
*Miller, J.H., and Company	Minneapolis Minnesota	
*Milwaukee Bridge Company	Minneapolis Minnesota	1927-1945
Minneapolis Bridge Company	Kansas City Missouri	1888-1917
*Minneapolis Steel and Machinery Company	Denver Colorado	1920-1927
*Missouri Valley Bridge and Iron Company	Waukesha Wisconsin	
*Monarch Engineering Company	Glenwood Springs Colorado	1899
Modern Structural Steel Company		1930
*Morrill and Broughton	Indianapolis Indiana	1906
*Moulton, M.E.		1909
*Mountain States Construction Company	Omaha Nebraska	
*National Bridge Company		1921-1926
*National Construction Company	Platteville Colorado	1906
Nebraska Bridge and Construction Company	Omaha Nebraska	1924
*Northwestern Construction Company	Denver Colorado	1915-1916
*O'Brien, W.A.	Denver Colorado	1895-1909
*O'Neill, Chris	Denver Colorado	1911-1912
*Omaha Structural Steel Works	Denver Colorado	1927
*Owens and Horner	Fowler Colorado	1932
*Patterson, M.J., Construction Company	Pittsburgh Pennsylvania	1939
*Patterson-Burghardt Construction Company	Pittsburgh Pennsylvania	
*Patterson, T.J.		
*Phelos Brothers		
*Pioneer Construction Company		
Pittsburgh Bridge Company		
Pittsburgh-Oes Moines Steel Company		

# BRIDGE INVENTORY

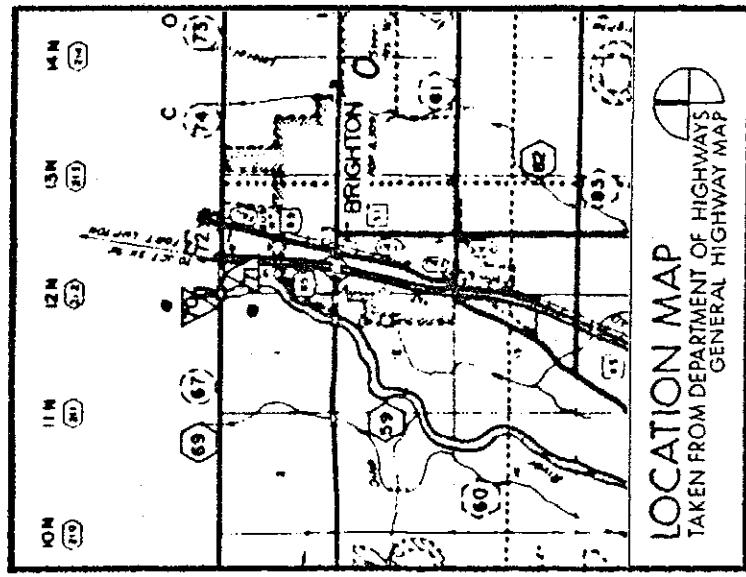
BY CONTRACTOR

Bridges bid by contractor  
\* Bridges built by contractor

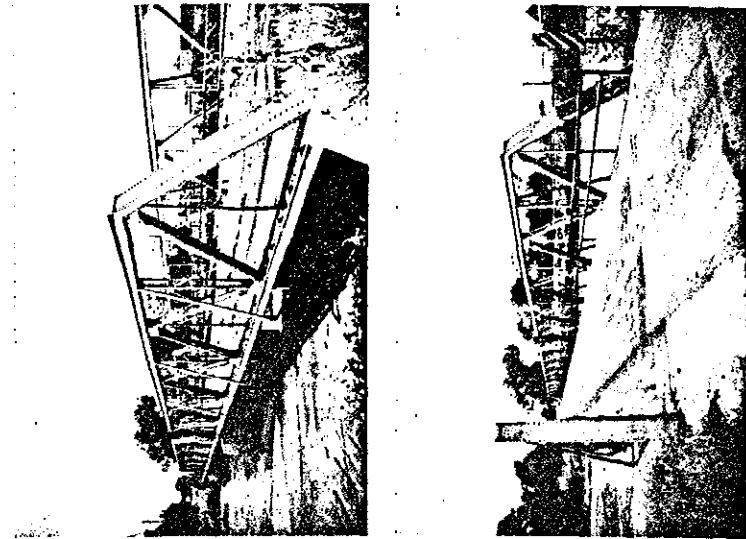
*Plains Construction Company		1922-1923
*Pueblo Bridge Company	Pueblo Colorado	1899-1924
*Roberts, J. Fred, and Sons	Denver Colorado	1927
*Robertson, A.J.	Greeley Colorado	1917-1924
*Rogers and Pickard	Ft. Collins Colorado	1922-1924
*Roller, W.H., Construction Company	Ft. Collins Colorado	1912-1914
*Roller, W.H., and Sons	Ft. Collins Colorado	1902-1905
*Roller and Sheeley Construction Company	Ft. Collins Colorado	1910-1911
*Royal Gorge Bridge and Amusement Company	Canon City Colorado	1929
*Sacra and Watts	St. Joseph Missouri	1934-1939
*Saint Joseph Bridge and Boiler Works	Pueblo Colorado	1891
*Salle Construction Company	Cedar Rapids Iowa	1924
Schillinger Brothers Company		
*Selander, Ed		1936
*Shadowen and Baker		1901
*Sharp, Walter, Bridge Company	El Dorado Kansas	1908
*Sheeley, J.R.	Ft. Collins Colorado	1914
*Sheeley, Ross L., and Company	Denver Colorado	1915
*Sheely, Charles G.	Pagosa Springs Colorado	1905-1911
*Shields, Grant	Pagosa Springs Colorado	1913
*Shields and Kyle		1924
*Shore, Henry		1936-1938
*Smith, S.L.		1889
*Southwestern Bridge Company	Joplin Missouri	1907-1908
*Standard Bridge Company	Omaha Nebraska	1913-1922
*Switzer, C.A.		1928
*Tarlton, G.L., Construction Company		1941
*Toledo-Massillon Bridge Company	Toledo Ohio	1910
Topeka Bridge Company	Topeka Kansas	
*Trinidad Foundry and Machine Company	Trinidad Colorado	1910-1916
United States Bridge Company		
Vincennes Bridge Company	Vincennes Indiana	
*Virginia Bridge and Iron Company	Roanoke Virginia	1924

# HABS/HAER INVENTORY

1. SITE ID NO													
2. NAME(S) OF STRUCTURE <b>Baseline Bridge</b>		AD01		5. ORIGINAL USE roadway bridge		7. CLASSIFICATION <b>BT&amp;A: TRUSS: STEEL</b>		7		6		0	
Bridge over South Platte River												3	
CDH: AOA168-12.05070												9. RATING	
3. SITE ADDRESS (STREET & NO) County Road 168 (Base Line Road) 7.8 miles northwest of Brighton SW <sub>1/4</sub> S1, T1S, R67W		6. PRESENT USE Roadway bridge				8. UTM ZONE 1		EASTING 3		NORTHING 5		10. DATE 1926	
4. CITY/VICINITY Brighton vicinity		COUNTY Adams		STATE Colorado		SCALE 1:24		1:24		1:24		11. REGION RMRO	
5. OWNER/ADMIN ADDRESS Adams County		12. OWNER/ADMIN ADDRESS Adams County		13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.		450 South Fourth Avenue		450 South Fourth Avenue		450 South Fourth Avenue		Brighton Colorado 80601	
<b>Rigid-connected, 10-panel steel Warren pony truss with verticals</b>													
span number: span length: overall length: roadway width :		3 80'0" 250'0" 19'2"		end/top chrd: bottom chord: vertical: diagonal: flr./decking: substructure:		2 channels w/ cover and batten plates 2 channels w/ batten plates 2 angles w/ batten plates; 1 angle 2 angles w/ batten plates asphalt over corrugated steel deck w/ steel stringers concrete wingwalls and solid concrete piers							
<p>Rigid-connected, 10-panel steel Warren pony truss with verticals</p> <p>span number: 3 span length: 80'0" overall length: 250'0" roadway width : 19'2"</p> <p>As work progressed on Base Line Road, a joint venture between adjacent Adams and Weld Counties, bids for construction of a steel bridge over the South Platte River were solicited. Proposals were received in February 1926 from eight bridgebuilding firms: the Pittsburgh-Des Moines Steel Company, Clinton Bridge Works, Monarch Engineering Company, Thomas J. Patterson, Chris O'Neill, H.M. Fox, Construction Service, Inc. and the Levy Construction Company. Denver-based Levy was awarded the contract with low bid of \$13,500. Using steel rolled by Illinois, the contractor completed this three-span Warren pony truss later that year. Though in relatively good condition still, it is scheduled for eventual replacement.</p>													
14. CONDITION ■ GOOD		□ FAIR		□ DETERIORATED		□ RUINS		15. DANGER OF DEMOLITION? (SPECIFY THREAT)		■ YES		□ NO	
16. SIGNIFICANCE												□ UNKNOWN	
<p>The Baseline Bridge is the longest-span example of the five representatives in the survey of this common variation on the basic Warren truss (others: AD02, FR16, FR25 and WE05). It is also notable as the only Warren pony truss in the survey which features multiple spans.</p>													



17 PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN  NO

20. EXISTING SURVEY  NR  NHIC  HABS  HAER  INPS  STATE  
 COUNTY  LOCAL  OTHER

21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: ADA168-12.05070. Colorado Department of Highways, Denver Colorado.  
Adams County Commissioners' Minutes: 19 February 1926 (Book 7, pages 80-81). Adams County Government Building, Brighton Colorado.

Ming Yeh, Adams County Engineer. Oral interview with Carl Hallberg, 24 August 1983.  
Field inspection by Carl Hallberg. 24 August 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE  
6 September 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO.										
2. NAME(S) OF STRUCTURE	Lado Del Rio Bridge									
Bridge over Piedra River		AC01		5. ORIGINAL USE		6. PRESENT USE		7. CLASSIFICATION		
CDH: ARF50-W0.1-S151		Roadway bridge		Roadway bridge		Roadway bridge		BT&A: TRUSS: STEEL		
3. SITE ADDRESS (STREET & NO.)		County Road F50 over Piedra River		STATE		UTM ZONE		EASTING		
3.6 miles north of Arboles		Colorado		1		3		2		
SW $\frac{1}{4}$ S28, T33N, R5W		COUNTY		SCALE		NORTHING		3		
Arboles vicinity		Archuleta		1:24		4		1		
4. CITY/VICINITY		Archuleta County		OTHER		0		0		
12. OWNER/ADMIN ADDRESS		Archuleta County Courthouse P.O. Box 1507 Pagosa Springs Colorado 81147								

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

pin/rigid-connected, 6-panel steel Pratt through truss

span number: 1  
span length: 115'0"  
overall length: 120'0"  
overall height: 17'6"  
clearance hgt.: 13'8"  
roadway width: 13'6"

end/top chord: 2 channels w/ cover plate and lacing  
bottom chord: 2 channels w/ batten plates  
vertical: 2 channels w/ lacing  
diagonal: 2 rectangular eyebars; 1 square eyebar w/ turnbuckle  
fir./decking: asphalt over corrugated steel decking  
substructure: steel pile bents w/ corrugated steel wingwalls

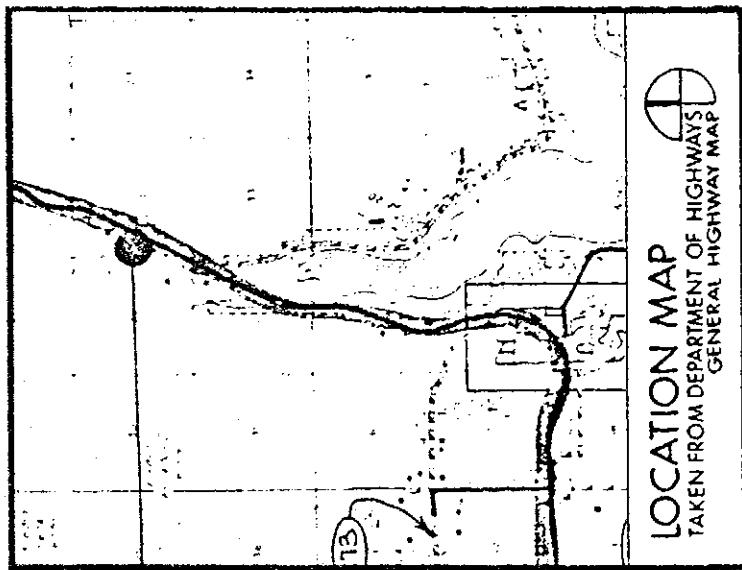
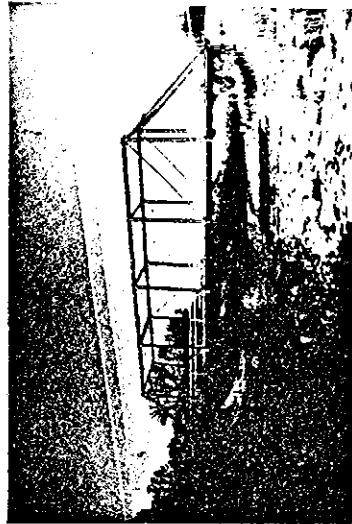
With financial assistance from the Colorado State Highway Commission, the Archuleta County Board of Commissioners opened competitive bids for a steel bridge on State Primary Road 15 near Pagosa Springs. The construction contract was awarded that month to the Missouri Valley Bridge Company of Leavenworth, Kansas, low bidder at \$3395. Using steel rolled by the Illinois Steel Company, Missouri Valley completed this medium-span Pratt through truss of their own design during that year. Later the highway was designated U.S. 160 and the bridge replaced and moved to this isolated crossing of the Piedra River on the Southern Ute Indian Reservation in the southern part of the county. There it remains in fair condition with superstructure unaltered other than deck replacement.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)
					<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN

16. SIGNIFICANCE

Concurrent with the development of more portable riveting equipment, the switch from pinned connections to the inherently stronger riveted for vehicular trusses occurred in the 1910s in Colorado. The Lado Del Rio Bridge is a transitional structure, featuring elements of both pin- and riveted-connection construction, with the bottom chord rigidly joined to the verticals at the end panel points. It is the only through truss in the survey with this configuration. Historically the bridge is significant as the oldest remaining roadway truss over the Piedra River, one of few bridges left in the state erected by A.J. Tullock's Missouri Valley Bridge Company, and the earliest traceable through truss for the State Highway Commission. Technologically interesting and historically significant, it has some importance to the bridge survey.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  YES, LIMITED  NO

20. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  
NO  UNKNOWN  COUNTY  NR  HABS  HAER  STATE  
 LOCAL  OTHER

Structure Inventory and Appraisal: ARF50-WO.1-S151. Colorado Department of Highways, Denver Colorado.  
3rd Biennial Report of the State Highway Commission of the State of Colorado. Denver Colorado: Smith-Brooks Printing Company, 1914. pages 94-101.

Field inspection by Clayton Fraser, 5 January 1984.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign Loveland Colorado

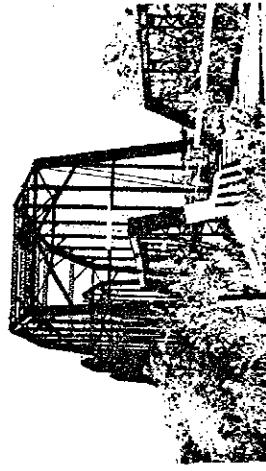
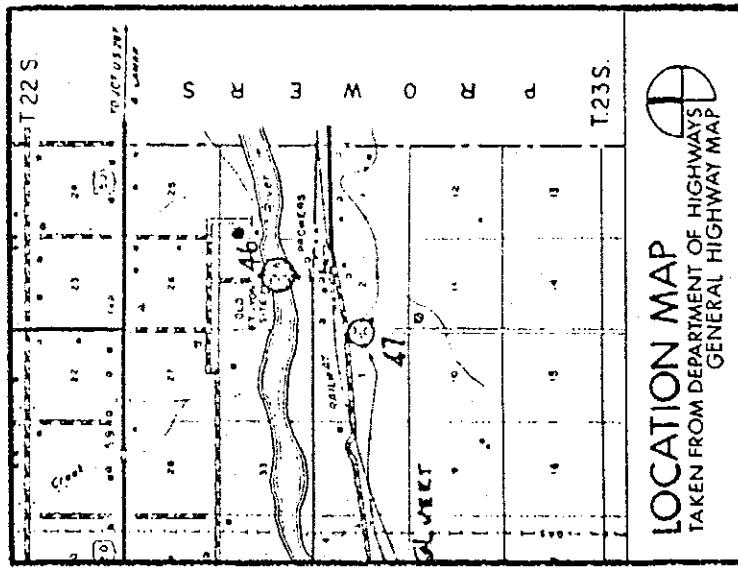
DATE  
18 January 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO		2. NAME(S) OF STRUCTURE <b>Prowers Bridge</b> Bridge over Arkansas River	3. SITE ADDRESS (STREET & NO) County Road 34 over Arkansas River 0.6 miles north of Prowers SE <sub>1/4</sub> S 35, T 22S, R48W	4. CITY/VICINITY <b>Prowers vicinity</b>	5. ORIGINAL USE roadway bridge	6. PRESENT USE roadway bridge	7. CLASSIFICATION <b>BT&amp;A: TRUSS: STEEL</b>	8. UTM ZONE 1 3	9. EASTING 6 9 5 7 8 0 4 2 1 8 3 4 0	10. DATE 1902 1906 1909	11. REGION RMRO
12. OWNER/ADMIN ADDRESS <b>Bent County</b>		STATE Colorado	COUNTY Bent	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	SCALE 1:24 1:62.5 OTHER	QUAD NAME Prowers	14. CONDITION <input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> FAIR <input type="checkbox"/> GOOD	15. DANGER OF DEMOLITION? (SPECIFY THREAT) <input type="checkbox"/> YES <input type="checkbox"/> RUINS <input type="checkbox"/> DETERIORATED	16. SIGNIFICANCE <input type="checkbox"/> UNKNOWN <input type="checkbox"/> NO		
<p><b>Colorado Historic Bridge Survey (Page 91)</b> HAER No. CO-30</p> <p><b>Pin-connected, steel 9-panel Camelback through, 6-panel Pratt through and 5-panel Pratt pony trusses</b></p> <p>span number: 1 Pratt pony; 2 Pratt through end/top chord: 2 channels w/ cover plate and lacing (Camelback)</p> <p>span length: 3 Camelback through bottom chord: 2 rectangular eyebars</p> <p>overall length: 160'0" (Camel.); 100'0" (Pratt) vertical: 2 channels w/ lacing ; 2 angles w/ batten plates</p> <p>overall height: 753'0" diagonal: 2 rectangular eyebars; 1 rd. or sq. eyebar w/ turnbuckle</p> <p>roadway width: 27'4" (Camel.); 17'0" (Pratt) flr./decking: asphalt over timber/corrugated steel deck w/ timber</p> <p>clearance hgt.: 16'6" or steel stringers and rolled steel floor beams</p> <p>substructure: uncased or steel-cased concrete piers; no retaining</p> <p>The Prowers Bridge is actually an aggregation of several years' trussbuilding, contracted for by Bent County as successive spans of the original bridge were replaced. First built as a pile bridge in 1900 by the Kansas City Bridge Company, it received its first Pratt through truss in the summer of 1902, erected by the Pueblo Bridge Company. In 1906 another identical Pratt through was erected to Pueblo onto the south portal of the earlier truss. Three years later three long-span Camelback throughs were built on the north portal, also by Pueblo. The final span - a Pratt pony - was added in 1921 after heavy flooding washed away the existing north approach. The bridge since that time has withstood several subsequent floods and, other than deck replacement, stands today in unaltered condition.</p>											

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES LIMITED  YES UNLIMITED  
 UNKNOWN  NO

20. EXISTING SURVEY?  NR  NPS  NHL  HAER  STATE  
 COUNTY  LOCAL  OTHER

21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  
 YES  NO

Structure Inventory and Appraisal: BT34-34.5-31-46. Colorado Department of Highways, Denver Colorado.

Bent County Commissioners' Minutes: 3 October 1899 (Book 2, page 578), 8 June 1900 (Book 3, pages 7-8), 2 July 1900 (Book 3, pages 10-11), 28 November 1900 (Book 3, page 198), 7 January 1901 (Book 3, page 56), 5 April 1901 (Book 3, page 87), 30 June 1902 (Book 3, page 198), 7 November 1902 (Book 3, page 222), 20 February 1903 (Book 3, page 250), 13 June 1903 (Book 3, page 277), 31 January 1906 (Book 3, page 512), 9 October 1907 (Book 4, page 5), 24 October 1907 (Book 4, page 9), 12 November 1908 (Book 4, page 114), 28 November 1908 (Book 4, page 115), 8 December 1908 (Book 4, page 117), 19 December 1909 (Book 4, page 117), 8 February 1909 (Book 4, page 133), 1 March 1909 (Book 4, page 136), 1 April 1909 (Book 4, page 141), 4 May 1909 (Book 4, page 153). Bent County Courthouse, Las Animas Colorado.

Builder's plates on bridge: "1902 The Pueblo Bridge Co. Pueblo Colo."; "1906 Built by Pueblo Bridge Co. Pueblo Colo.".  
"1908 Pueblo Bridge Co. Builders Pueblo, Colo."

Field inspection by Clayton Fraser and Carl Hallberg, 9 September 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign

Loveland Colorado  
18 September 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO										
2. NAME(S) OF STRUCTURE	Granite Bridge; State Bridge Bridge over Arkansas River									
CDH:	CHA397-00.03									
3. SITE ADDRESS (STREET & NO.)	County Road 397 over Arkansas River SE $\frac{1}{4}$ S31, T11S, R79W									
4. CITY/VICINITY	Chaffee County									
Granite										
12. OWNER/ADMIN ADDRESS	Chaffee County Courthouse 132 Crestone Salida Colorado 81201									
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	<p>Rigid-connected, 5-panel steel Pratt pony truss</p> <p>span number: 1</p> <p>span length: 65'0"</p> <p>overall length: 66'0"</p> <p>roadway width: 15'6"</p> <p>end/top chrd: 2 channels w/ cover plate and lacing</p> <p>bottom chord: 2 channels w/ batten plates</p> <p>vertical: 4 angles w/ batten plates</p> <p>diagonal: 4 angles w/ batten plates</p> <p>fir./decking: asphalt over corrugated steel decking w/steel stringers</p> <p>substructure: concrete wingwalls</p>									

1. CONDITION

EXCELLENT

GOOD

FAIR

DETERIORATED

RUINS

16. SIGNIFICANCE

Once a regionally important crossing of the Arkansas River on State Primary Road 17 between Buena Vista and Leadville, the Granite Bridge is one of the last trusses designed and contracted for by the State Engineer's Office - the predecessor to the State Highway Commission. It was erected by Colorado's most prolific bridgebuilding firm, the Pueblo Bridge Company. But the bridge is most significant as the earliest dateable example in the survey of the state's most common bridge type - the riveted Pratt pony truss.

5. ORIGINAL USE	6. PRESENT USE		7. CLASSIFICATION		8. UTM ZONE		EASTING		NORTHING		11. REGION									
roadway bridge	roadway bridge		BT&A: TRUSS: STEEL		1	3	3	9	0	5	3	0	4	3	2	2	1	2	5	RMRO
CA01	CDH: CHA397-00.03		1911		SCALE	1:24	1:24	1:24	1:24	1:24	1:24	1:24	1:24	1:24	1:24	1:24	1:24	1:24	1:24	1:24
					OTHER															
					NAME	Quadrant Name														
					GRANITE	GRANITE														

Colorado Historic Bridge Survey (Page 93 )  
HAER No. CO-30

14. CONDITION

EXCELLENT

GOOD

FAIR

DETERIORATED

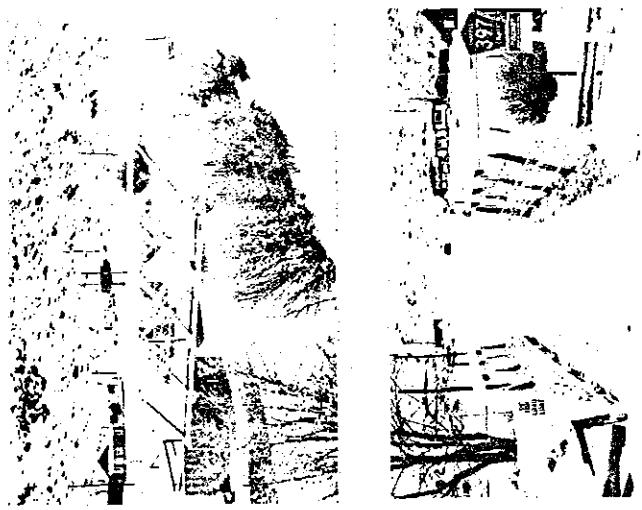
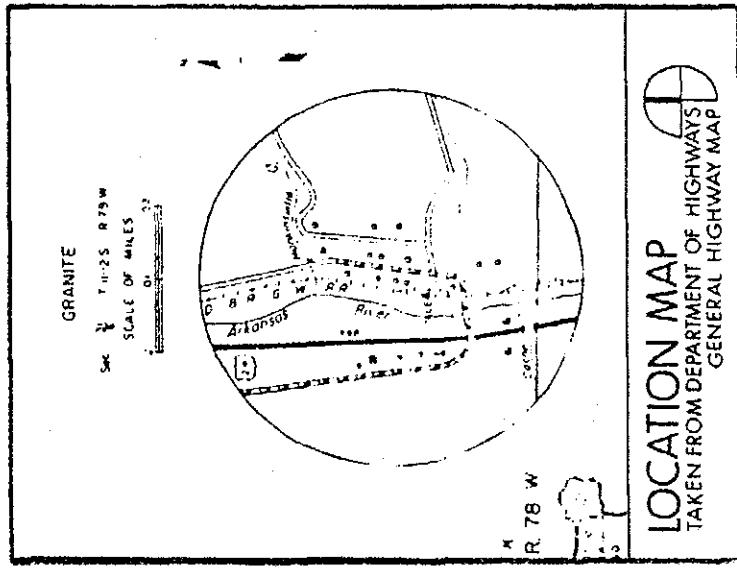
RUINS

UNKNOWN

15. DANGER OF DEMOLITION?  YES  NO  UNKNOWN

(SPECIFY THREAT)

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  YES, LIMITED  NO  UNKNOWN

20. EXISTING SURVEYS  NA  NHC  HABS  HAER  OTHER

COUNTY  LOCAL  STATE

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: CHA397-00.03. Colorado Department of Highways, Denver Colorado.  
15th Biennial Report of the State Engineer, Colorado: 1909-1910. Denver Colorado: Smith-Brooks Printing Company,  
1911. page 143.

Vertical files of the State Engineer: H-11-B, Granite Bridge. Colorado Department of Highways, Denver Colorado.  
Field inspection by Clayton Fraser, 16 December 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign

DATE  
19 December 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



## 1. SITE I.D. NO

2. NAME(S) OF STRUCTURE		CA02	5. ORIGINAL USE	7. CLASSIFICATION		9. RATING	
Morley Bridge; Pomroy Gulch Bridge		CA02	railroad bridge	BT&A: TRUSS: WROUGHT IRON		7	6
Bridge No. 1178						0	2
CDH: CHA295A-00 .40						10. DATE	1881
3. SITE ADDRESS (STREET & NO.)		6. PRESENT USE		8. UTM ZONE		11. REGION	
County Road 295A over Chrysolite Creek		roadway bridge		1	3	EASTING	RMRO
2.5 miles south of St. Elmo				1	3	3 8 1 3 4 0	NORTHING
SE <sub>4</sub> S13, T51N, R80W				1	3	4 2 8 1 4 0	
4. CITY/VICINITY		STATE	12. OWNER/ADMIN ADDRESS	SCALE	1:24	QUAD NAME	St. Elmo
St. Elmo vicinity		Colorado	Chaffee County	OTHER	1:62.5		
			Chaffee County Courthouse				
			132 Crestone				
			Salida Colorado 81201				

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Pin-connected, 6-panel wrought iron Pratt deck truss

span number: 1  
span length: 80'0"  
overall length: 83'0"  
overall height: 14'0"  
roadway width : 13'2"

end / top chrd: 2 rect. eyebars (end); 2 channels w/ lacing (top)  
bottom chord: 2-4 rectangular eyebars  
vertical: 2 channels w/ lacing  
diagonal: 2 rectangular eyebars; 1 round eyebar w/ turnbuckle  
flr./decking: timber deck and stringers w/ paired iron floor beams  
substructure: stone ashlar abutments

Colorado Historic Bridge Survey (Page 95 )

HAER No. CO-30

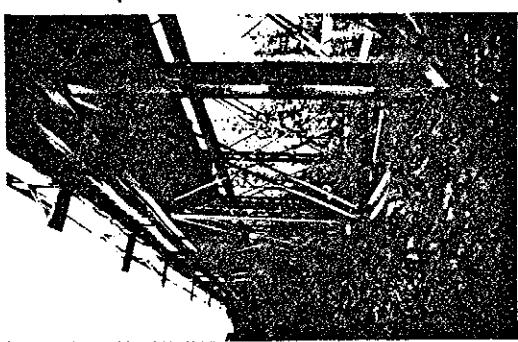
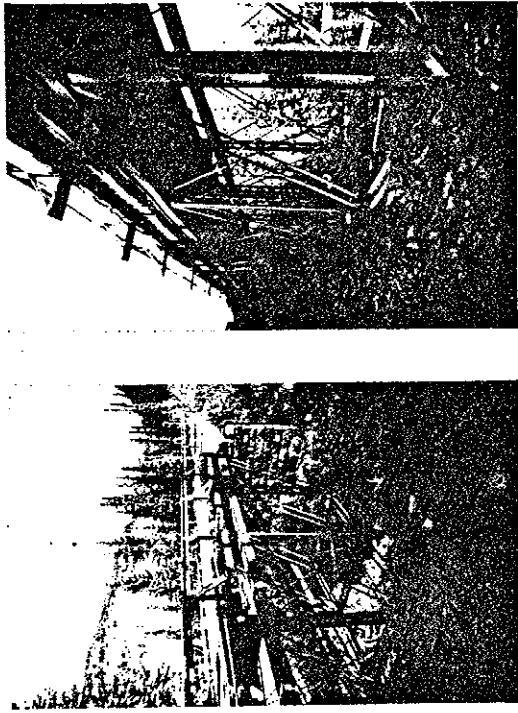
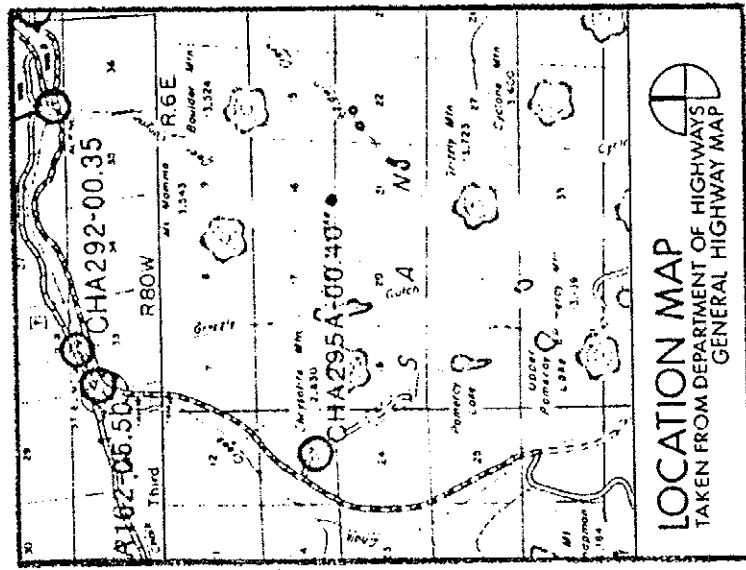
The Denver, South Park and Pacific Railroad ran its tracks from the connection with the Denver and Rio Grande at Nathrop to the gold mining region around St. Elmo in 1880. Early in 1881 track crews pushed past Morley (also called Red Town, because all the buildings were painted red, and later renamed Romley in 1887) to the site of the Alpine Tunnel. The line to Gunnison was completed in 1882. This wrought iron deck truss over Pomroy Gulch at Morley is one of the original bridges erected by the railroad, built probably by a DSP&P bridge crew using components fabricated at the Trenton works of the New Jersey Iron Company. As the mines in the region gradually played out, segments of the rail line were closed - this one in 1926 - and the bridge was redecked for vehicular traffic, seldom used and in unaltered condition.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN
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## 16. SIGNIFICANCE

Functioning in place for over 100 years, the Morley Bridge is reportedly Colorado's oldest intact span - either roadway or railway. It is one of few trusses remaining in the state with wrought and cast iron components and the only pin-connected deck truss in the survey. One of four or five railroad crossings which have later been converted in-place to vehicular use, it is one of two such structures which remain from the narrow-gauge DSP&P line to the mineral-rich St. Elmo region (the other: the Hortense Bridge; CA12). Historically and technologically significant, the Morley Bridge is one of Colorado's most important spans.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  UNKNOWN  NO

20. EXISTING SURVEYS  NR  COUNTY  LOCAL  OTHER  HAER  NPS  STATE

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS AND/OR OTHER

Structure Inventory and Appraisal: CHA295A-00.40. Colorado Department of Highways, Denver Colorado.  
Bridges and Buildings and Other Structures. Structure inventory of Union Pacific Railroad, Omaha Nebraska: Omaha Republican Printing, 1886. page 52. Provided by Colorado Railroad Museum, Golden Colorado.  
Robert Richardson, Director of Colorado Railroad Museum. Oral interview with Clayton Fraser, 9 February 1984.  
Ormes, Robert. Tracking Ghost Railroads in Colorado. Colorado Springs, Colorado: Century One Press, 1975, rev. 1980.  
Highway Planning Survey photograph: J-111-0. Colorado Department of Highways, Denver Colorado, 29 July 1936.  
Field inspection by Clayton Fraser and Carl Hallberg, 7 October 1983.  
Colorado Historic Sites Inventory: Romley, 5CF319. Colorado State Historical Society, Denver Colorado.

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO			
2. NAME(S) OF STRUCTURE Brown's Canon Bridge; State Bridge Bridge over Arkansas River CDH: CHA191-01.57	CA06	5. ORIGINAL USE roadway bridge	6. PRESENT USE roadway bridge
3. SITE ADDRESS (STREET & NO) County Road 191 over Arkansas River 6.3 miles northwest of Salida NE <sup>1/4</sup> S10, T50N, R78W	COUNTY Chaffee	STATE Colorado	7. CLASSIFICATION BT&A: BEAM: REINFORCED CONCRETE
4. CITY/VICINITY Salida vicinity	8. UTM ZONE 1	9. EASTING 3	10. DATE 1908
12. OWNER/ADMIN ADDRESS Chaffee County Courthouse	11. REGION RMRO		

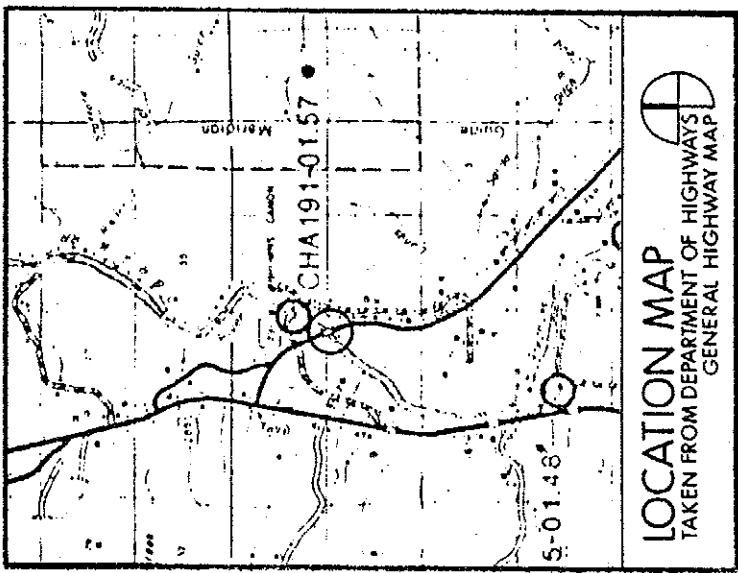
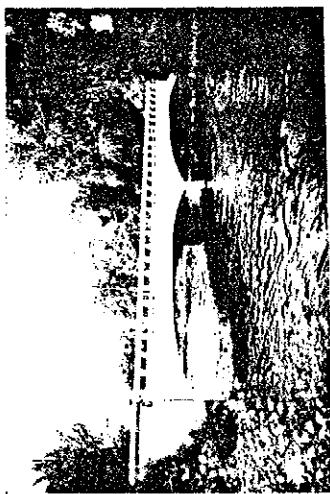
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.
<b>Reinforced concrete slab-and-girder bridge with curvilinear springers</b>

Chaffee County Courthouse 123 Crestone Salida Colorado 81201

span number: span length: overall length: roadway width :	2 40'0" 86'0" 17'2"	floors/decking: substructure: guardrails :	earth fill over concrete floor solid concrete pier w/ concrete retaining abutments square concrete balusters w/ simple rectangular guardrail; massive rectangular bulkheads w/ beveled copings
14. CONDITION EXCELLENT	FAIR	DETERIORATED	RUINS
15. DANGER OF DEMOLITION? (SPECIFY THREAT)	NO	UNKNOWN	

Early in 1908 the State Legislature appropriated \$4000 toward construction of a bridge over the Arkansas River in Brown's Canon northwest of Salida. The design produced for this reinforced concrete slab-and-girder span by the State Engineer's Office was a standard one, used for a number of similar bridges in the state. After advertising in April 1908, bids were received in May from Charles G. Sheely, M.F. Levy and the Pueblo Bridge Company of Pueblo Colorado - the state's most prolific bridgebuilder. Pueblo was awarded the construction contract for \$4200. Work on the abutments began late in May, and the bridge was completed in October of that year. Originally on the main highway between Salida and Buena Vista, the Brown's Canon Bridge has now been relegated to county road status with the realignment of the highway, and it remains in place today, with only minor concrete spalling affecting its structural and architectural integrity.

16. SIGNIFICANCE  
Although the steel truss remained the bridge of necessity for long-spanned early roadway crossings, the reinforced concrete bridge was often the bridge of choice when funding permitted. From 1907 to 1910 the State Engineer designed and built several short-span concrete slab-and-girder bridges in Colorado. Once valued for their stability under traffic and resistance to flooding, only a few are left today. Of these the Brown's Canon Bridge is neither the oldest (NE02; 1907) nor the longest-span (CN07; 50'). But with its curved springers, articulated balustrade and dedication plaque, it is the most architecturally sophisticated. Once a regionally important vehicular crossing of the Arkansas River, the Brown's Canon Bridge rests in a pristine setting as one of the state's more significant concrete spans.



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> UNKNOWN	<input type="checkbox"/> NO
20. EXISTING SURVEYS			
<input type="checkbox"/> NHR <input type="checkbox"/> NHL <input type="checkbox"/> HABS <input type="checkbox"/> HAER <input type="checkbox"/> STATE <input type="checkbox"/> COUNTY <input type="checkbox"/> LOCAL <input type="checkbox"/> OTHER			

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: CHA191-01.57. Colorado Department of Highways, Denver Colorado.  
14th Biennial Report of the State Engineer, Colorado: 1907-1908. Denver Colorado: Smith-Brooks Printing Company,  
1909. page 87.

Colorado State Engineer. Original construction drawings for Reinforced Concrete 8ridge over Arkansas River at  
Brown's Canon for Chaffee County Colorado. Approved 20 April 1908. Provided by Chaffee County Clerk, Salida Colorado.  
Field inspection by Clayton Fraser and Carl Hallberg. 6 October 1983.

Dedication plate on bridge: "1908 State Bridge Under an Act of the 16th General Assembly Thomas J. Ehrhart Senator.  
Board of Construction T.W. Jaycox, State Engineer . . Contractor, the Pueblo Bridge Company".  
Lawrence Campion, Chaffee County Road Clerk. Oral interview with Clayton Fraser, 23 November 1983.

22. INVENTORIED BY	Clayton Fraser and Carl Hallberg	AFFILIATION	Fraserdesign Loveland Colorado
		DATE	28 November 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service

Washington, DC 20240

1. SITE I.D. NO.						
2. NAME(S) OF STRUCTURE	F Street Bridge	6. ORIGINAL USE	Roadway bridge	7. CLASSIFICATION		
Bridge over Arkansas River	CDH: SAL00F-00.95	6. PRESENT USE	Roadway bridge	BT&A: ARCH: REINFORCED CONCRETE	7	5
F Street over Arkansas River	SE $\frac{1}{4}$ S4, T49N, R9E	6. PRESENT USE	Roadway bridge	8. UTM ZONE	9	5
				EASTING	11. REGION	
				NORTHINGS	RMRD	
4. CITY/VICINITY	Salida	STATE	Colorado	SCALE	QUAD NAME	
12. OWNER/ADMIN ADDRESS	City Hall	13. CITY	124 E Street	1:24	Poncha Springs	
			Salida Colorado 81201	1:32.5		

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES!, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

## Segmental, reinforced concrete Luten arch

span number: 2  
 span length: 60'0"  
 overall length: 128'0"  
 roadway width : 32'0"

flr./decking: asphalt over earth fill  
 substructure: buttressed concrete pier; concrete retaining abutments  
 guardrails : rectangular guardrails w/ solid concrete parapet walls  
 w/ incised panels

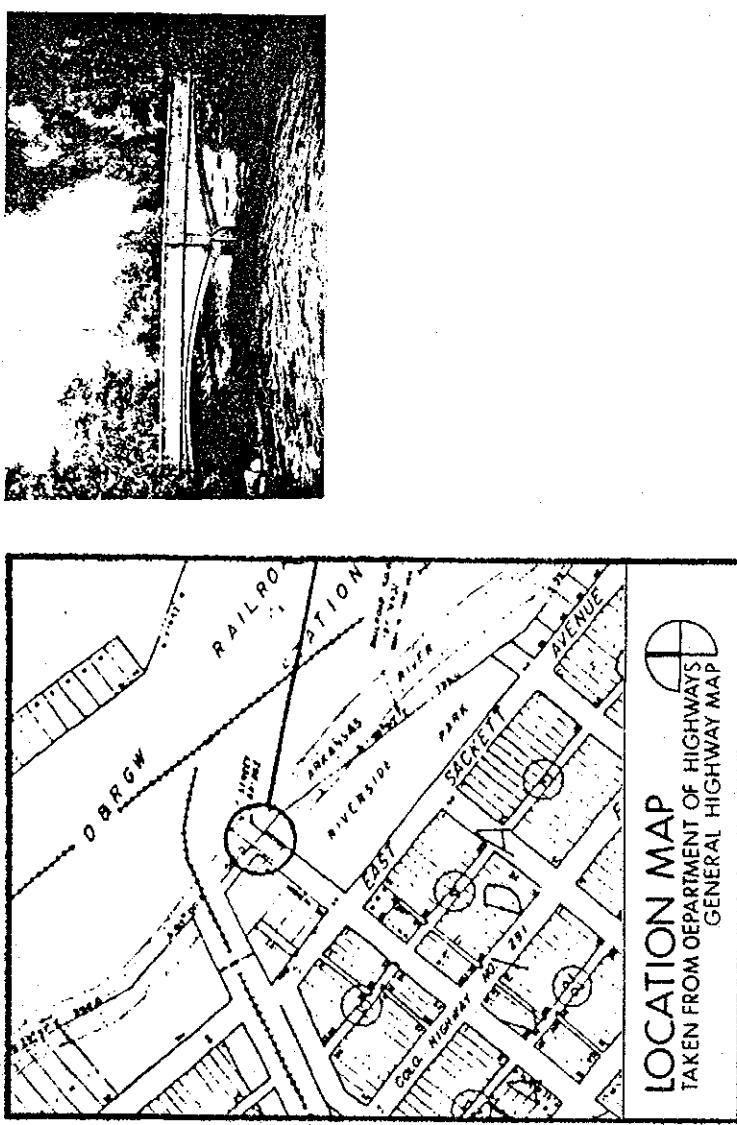
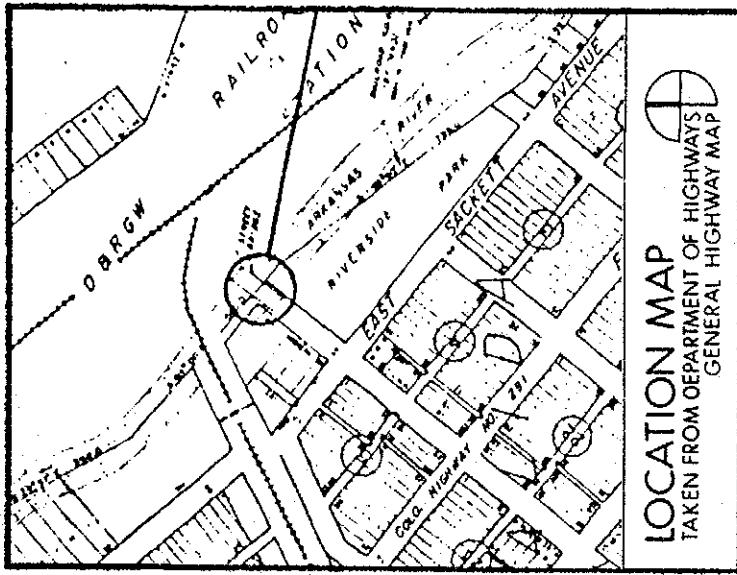
In the spring of 1906, after two years of intermittent planning, the Salida City Council and the Denver and Rio Grande Railroad began seriously to consider the construction of a new bridge on Lower F Street to replace the existing through truss to the D&RG railyards. Using plans and specifications prepared by the railroad, the city advertised for bids in March. A month later proposals were received from eight bridge contractors, several of whom submitted alternate plans. Though not the lowest bidder, the Pueblo Bridge Company was awarded the contract for \$18,500. Over the protests of the railroad, Pueblo Bridge shortened and narrowed the design at the request of the city, lowering the price by \$2080. The old bridge superstructure was sold for \$50, and work continued on the two-span arch throughout 1906 and early 1907 until the bridge was completed in April 1907. It remains little used in place today, and other than the removal of mid-span lampposts, the bridge is structurally and architecturally intact.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN
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16. SIGNIFICANCE

After the turn of the century, the preferred alternative to the steel truss for short-span vehicular bridges was generally considered to be the concrete arch. More solid under traffic and better resistant to flooding, they were also valued as more aesthetically refined than the starkly functional steel truss. By far the most prolific concrete bridgebuilder in Colorado was the Pueblo Bridge Company, and the most common type of concrete bridge was the filled spandrel arch patented by Daniel Luten around 1904. The F Street Bridge is a well-preserved early Luten arch - the oldest left in the state built by Pueblo Bridge. Spanning the Arkansas River in a park setting, it is one of the most significant of Colorado's concrete roadway spans.

17. PHOTOS AND SKETCH MAP OF LOCATION



LOCATION MAP  
TAKEN FROM DEPARTMENT OF HIGHWAYS  
GENERAL HIGHWAY MAP

18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN

21 REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: SAL00F-00-95. Colorado Department of Highways, Denver Colorado.

Salida City Council Minutes: 8 June 1904 (Book 2, page 166), 2 January 1906 (Book 3, page 65), 26 March 1906 (Book 3, pages 82-83), 23 April 1906 (Book 3, pages 94-96), 24 April 1906 (Book 3, pages 97-98), 27 April 1906 (Book 3, pages 99-100), 18 June 1906 (Book 3, pages 113-4), 2 July 1906 (Book 3, page 118), 4 September 1906 (Book 3, pages 135-6), 1 October 1906 (Book 3, page 143), 5 November 1906 (Book 3, pages 149-50, 155), 7 January 1907 (Book 3, pages 170-71, 173), 3 April 1907 (Book 3, pages 193, 195), 15 April 1907 (Book 3, page 199). Postcard No. 334. "Riverside Park, showing new bridge, Salida, Colorado." Denver: Thayer Publishing Co., n.d. Postcard provided by Salida City Clerk.

Dedication plate on bridge: "Erected AD 1906 By the City of Salida. . . ."

Field inspection by Clayton Fraser and Carl Hallberg, 6 October 1983.

22. INVENTORIED BY \_\_\_\_\_  
Clayton Fraser and Carl Hallberg

AFFILIATION	Fraserdesign	Loveland Colorado	DATE
			10 October 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

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1. SITE I.D. NO

2. NAME(S) OF STRUCTURE Bridge over Arkansas River COH: CHA371-01.70	5. ORIGINAL USE roadway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL	9. RATING 7 6 0 3
3. SITE ADDRESS (STREET & NO) County Road 371 over Arkansas River 1.8 miles north of Buena Vista NW <sub>4</sub> S5, T14S, R78W	6. PRESENT USE roadway bridge	10. DATE 1909	
4. CITY/VICINITY Buena Vista vicinity	7. UTM ZONE 1 3	8. EASTING 4 0 1 2 7 0 4 3 0 2 3 5 0	11. REGION RMRO
12. OWNER/ADMIN ADDRESS Chaffee County	STATE Colorado	SCALE 1:24 OTHER 1:82.5	QUAD NAME Buena Vista

Chaffee County Courthouse

13. DESCRIPTION AND BACKGROUND HISTORY (INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.)

Rigid-connected, 3-panel steel truss leg bedstead

span number: 1  
span length: 50'0"  
overall length: 51'0"  
roadway width : 12'0"

end/top chord: 4 angles w/ continuous plate (end); 2 angles (top)  
bottom chord: 1-2 angles  
vertical: 2 angles  
diagonal: 1-2 angles  
flr./decking: timber decking and stringers w/ steel floor beams  
substructure: steel pile bents w/ log cribbing and timber diagonals

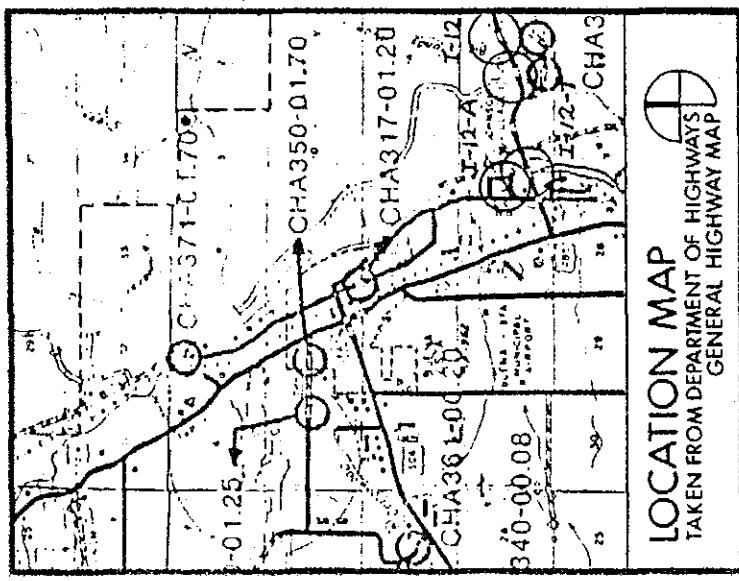
Colorado Historic Bridge Survey (Page 101)  
HAER No. CO-30

14. CONDITION <input type="checkbox"/> EXCELLENT <input type="checkbox"/> GOOD <input checked="" type="checkbox"/> FAIR <input type="checkbox"/> PETERIORATED <input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> UNKNOWN to be replaced
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16. SIGNIFICANCE

Although others are known to have been erected in the state, the Four Mile Bridge is the only remaining example of this peculiar roadway truss type in Colorado. With its upright end posts, unusual chord configuration and composition and juryrigged substructure, it is a technologically interesting anomaly - a unique example of a nonstandard vehicular bridge design.

17 PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  YES, LIMITED  UNKNOWN

20. EXISTING SURVEY  NA  NPS  NHL  HAER  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: CHA371-01.70. Colorado Department of Highways, Denver Colorado.

Chaffee County Commissioners' Minutes: 4 January 1909 (Book 7, page 391), 11 January 1909 (Book 7, page 393), 2 February 1909 (Book 7, page 402), 3 May 1909 (Book 7, page 417). Chaffee County Courthouse, Salida Colorado.

Highway Planning Survey photograph: I-12-AM. Colorado Department of Highways, Denver Colorado. 28 July 1936.

Field inspection by Clayton Fraser and Carl Hallberg. 5 October 1983.

Lawrence Campton, Chaffee County Road Clerk. Oral interview with Clayton Fraser, 23 November 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE

25 November 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



1. SITE ID. NO

2. NAME(S) OF STRUCTURE  
Bridge over Arkansas River  
CDH: I-12-T

3. SITE ADDRESS (STREET & NO) U.S. Highway 24 over Arkansas River 5.6 miles Southeast of Buena Vista SE <sub>4</sub> S22, T14S, R78W	4. CITY/VICINITY Buena Vista vicinity	5. ORIGINAL USE highway bridge	6. PRESENT USE highway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL	8. UTM ZONE 1	EASTING 13	NORTHING 00	9. RATING 7 6 0 3
					10. DATE 1937			

11. REGION RMRO	12. OWNER/ADMIN ADDRESS Colorado Department of Highways	13. DESCRIPTION AND BACKGROUND HISTORY (INCLUDING CONSTRUCTION DATES), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.
	4201 East Arkansas Avenue Denver Colorado 80222	

Rigid-connected, 6-panel steel Pratt deck truss  
span number: 1  
span length: 125'0"  
overall length: 353'0"  
roadway width: 30'0"

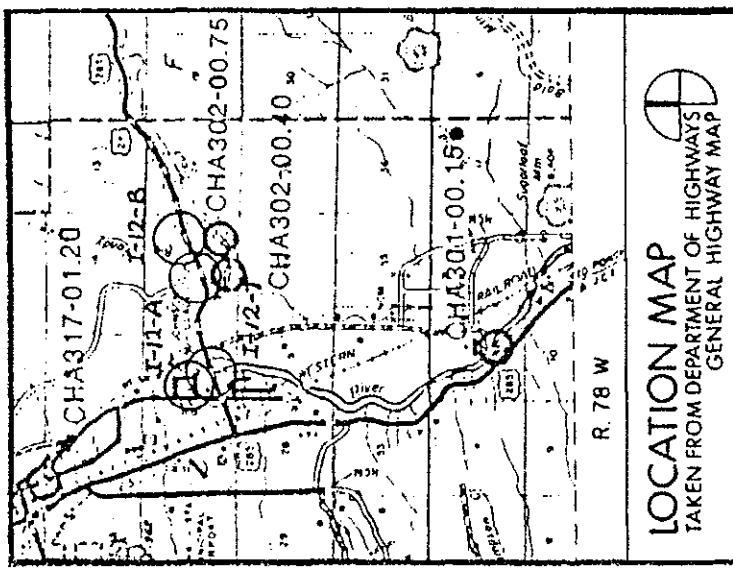
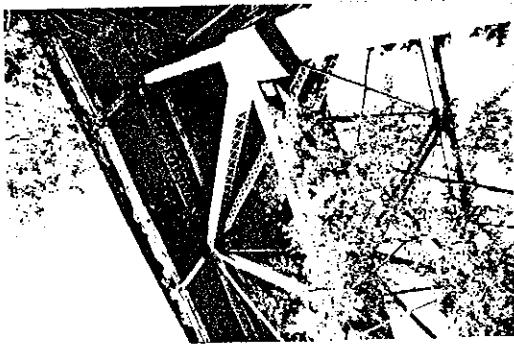
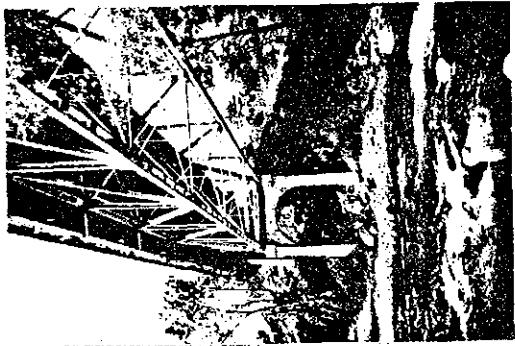
end/top chord: 1 beam (end); 2 channels w/ double lacing (top)  
bottom chord: 2 channels w/ batten plates  
vertical: wide flange  
diagonal: wide flange  
flr./decking: monolithic concrete deck over steel floor beams  
substructure: spill-through concrete piers w/ concrete wingwalls

Colorado Historic Bridge Survey (Page 103)  
HAER No. CO-30

By 1937 the old Free Gold Bridge over the Arkansas River near the State Reformatory had been allowed to deteriorate to the point of replacement. The Colorado Department of Highways designed this Pratt deck truss and let the project out for bid. The construction contract was awarded to M.E. Carlson. Using steel components fabricated by the Minneapolis-Moline Power Implement Company, he completed the bridge in 1937. It features a heavily skewed riveted Pratt design, with opposing diagonals at the end panel points and steel stringer approach spans on both ends. With sub- and superstructures unaltered, the bridge has remained in continuous use and is today in excellent condition.

14. CONDITION <input checked="" type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	15. DANGER OF DEMOLITION? (SPECIFY THREAT) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> UNKNOWN
16. SIGNIFICANCE				

Among the five riveted Pratt deck trusses included in the survey, the Arkansas River Bridge is the only one with a skewed configuration and is the longest-span example. Mounted high over the Arkansas River on spill-through concrete piers, it is the most visually impressive of the group - an excellent example of later highway truss design and construction.



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  YES, LIMITED  NO  UNKNOWN  
20. EXISTING SURVEY  NR  NHL  HABS  HAER  OTHER  
 COUNTY  LOCAL

21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: I-12-T. Colorado Department of Highways, Denver Colorado.

Chaffee County Commissioners' Minutes: 17 July 1895 (Book 6, page 177), 21 July 1896 (Book 6, page 239). Chaffee County Courthouse, Salida Colorado.

Dedication plate on bridge: "Colorado State Highway Department Arkansas River 1937".  
Field inspection by Clayton Fraser and Carl Hallberg, 7 October 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign

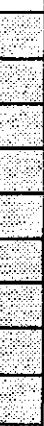
Loveland Colorado

DATE  
15 February 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service

Washington, DC 20240



1. SITE I.D. NO.

2. NAME(S) OF STRUCTURE

Hortense Bridge; Bridge No. 1167  
Bridge over Chalk Creek  
CDH: J-12-0

3. SITE ADDRESS (STREET & NO.)

State Highway 162 over Chalk Creek  
4.3 miles West of Nathrop  
NW<sub>1/4</sub> S19, T15S, R78W

4. CITY/VICINITY

Nathrop vicinity  
12. OWNER/ADMIN ADDRESS

Colorado Department of Highways 4201 East Arkansas Avenue Denver Colorado 80222

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Pin/rigid-connected timber/iron Queenpost pony truss w/ buttresses and diagonal bracing

span number: 1

span length: 39'0"

overall length: 40'0"

roadway width: 20'6"

end/top chrd: timber w/ metal cover

bottom chord: 2 rectangular eyebars

vert./diag.: 2 round eyebars (vert.); 1 round eyebar (diag.)

fir./decking: timber deck and stringers w/ paired metal floor beams

substructure: stone ashlar abutments

Track crews for the Denver, South Park and Pacific Railroad began laying the line from its connection with the Denver and Rio Grande at Nathrop early in 1880. By July the end of the tracks had reached Hortense Hot Springs (also called Mt. Princeton Hot Springs), and by December the line had been completed to the St. Elmo mining district. At Hortense the railroad erected a two-span combination truss over Chalk Creek totalling 82' in length. As the mines in the district began to play out segments of the line were abandoned - this one in 1926 - and the grade was converted to vehicular use. It is unclear, but physical evidence suggests that this braced Queenpost truss, comprised of timbers and iron components fabricated by the New Jersey Iron Works is one span of the original 1880 Hortense Bridge, functioning in-place with the center pier converted into an abutment. Now on a minor state highway it remains in fair condition.

14. CONDITION

EXCELLENT

GOOD

FAIR

DETERIORATED

RUINS

15. DANGER OF DEMOLITION? (SPECIFY THREAT)

YES

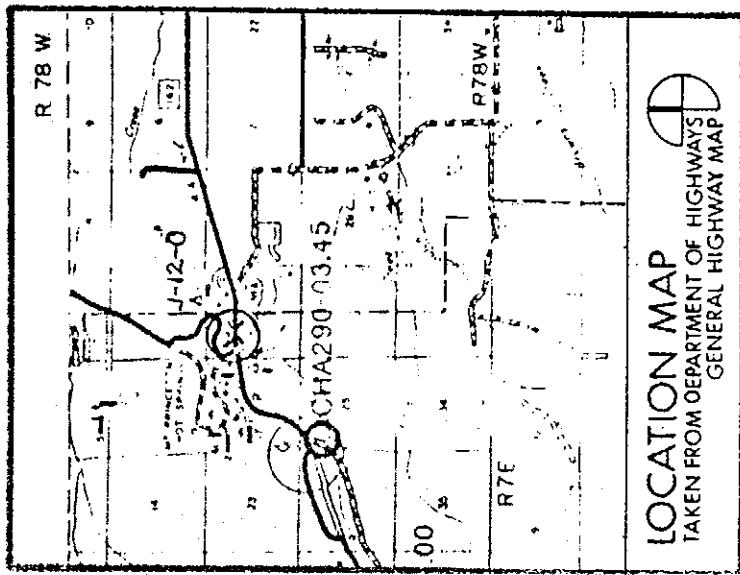
NO

UNKNOWN

16. SIGNIFICANCE

Probably erected by a DSP&P bridge crew, the Hortense Bridge features standard span-length and configuration for that narrow gauge railroad; it is identical to the Estabrook Bridge in Park County, another early DSP&P span. Fabricated by the Trenton-based New Jersey Iron Works (one of the many companies consolidated into the American Bridge Company at the turn of the century), it is the oldest timber/iron bridge in the survey and shares the distinction as the oldest bridge superstructure with the Ute Trail Bridge (CA05), another converted railroad structure in Chaffee County. As the only example in the survey of what was once a very common early truss type - the timber/iron Queenpost - the Hortense Bridge is technologically significant. As a very early span associated with an important Colorado railroad it is historically significant.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			
STRUCTURE INVENTORY and Appraisal: J-12-0. Colorado Department of Highways, Denver Colorado.			
Bridges and Buildings and Other Structures. Structure inventory of Union Pacific Railroad, Omaha Nebraska: Omaha Republican Printing, 1886. page 51. Provided by Colorado Railroad Museum, Golden Colorado.			
Robert Richardson, Director of Colorado Railroad Museum. Oral interview with Clayton Fraser, 9 February 1984.			
Robert Ormes. <u>Tracking Ghost Railroads in Colorado</u> . Colorado Springs, Colorado: Century One Press, 1975, rev. 1980.			
Field inspection by Clayton Fraser and Carl Hallberg, 7 October 1983.			
"Organization of the American Bridge Company." <u>Electrical World and Engineer</u> , Vol. XXXVI, Number 1 (7 July 1900). page 38.			

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER	<input type="checkbox"/> NML	<input type="checkbox"/> NR
	<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL
	<input type="checkbox"/> HABS	<input type="checkbox"/> HAER
	<input type="checkbox"/> OTHER	<input type="checkbox"/> NPS
	<input type="checkbox"/> STATE	

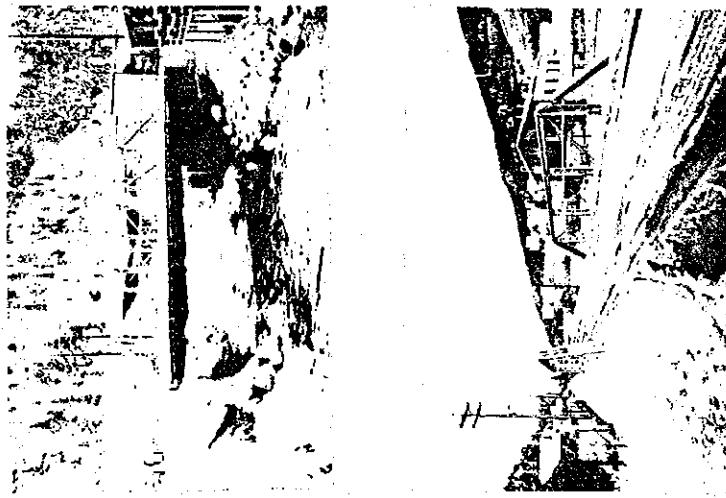
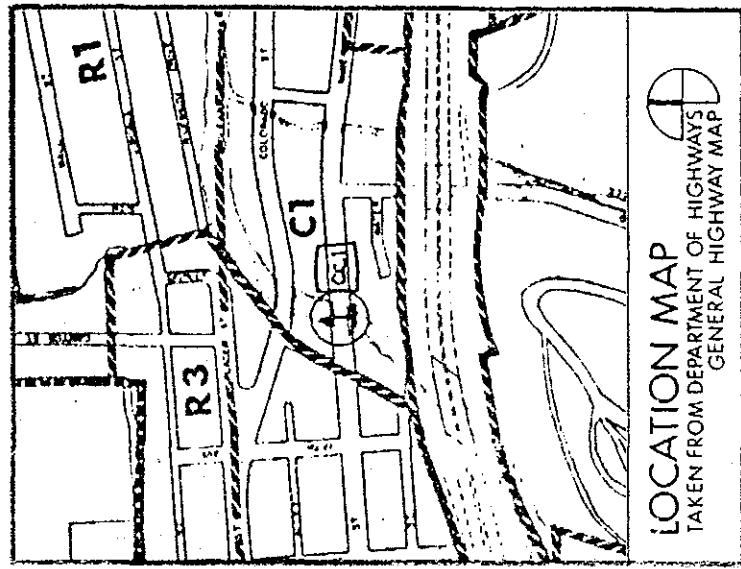
22. INVENTORED BY	Clayton Fraser and Carl Hallberg	AFFILIATION	Fraserdesign	Loveland Colorado	DATE
					15 February 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO.							
2. NAME(S) OF STRUCTURE	Miner Street Bridge						
Bridge over Clear Creek							
CDH: IDAHO SPGS. 01							
3. SITE ADDRESS (STREET & NO.)	Miner Street over Clear Creek						
SW <sup>1/4</sup> S31, T3S, R73W							
4. CITY/VICINITY	Idaho Springs						
5. ORIGINAL USE	roadway bridge						
CC01							
6. PRESENT USE	roadway bridge						
7. CLASSIFICATION	BT&A: TRUSS: STEEL						
8. UTM ZONE	1	3	4	5	6	0	2
SCALE	1:24	1:24	1:24	1:24	1:24	1:24	1:24
9. EASTING							
NORTHING							
10. DATE	1901						
11. REGION	RMRO						
12. OWNER/ADMIN ADDRESS	Clear Creek						
COUNTY	Colorado						
STATE							
13. DESCRIPTION AND BACKGROUND HISTORY (INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.)	<p>Pin-connected, 5-panel steel Pratt pony truss, skewed</p> <p>span number: 1</p> <p>span length: 60'0"</p> <p>overall length: 66'0"</p> <p>roadway width: 23'5"</p> <p>sidewalk width: 6'5" cantilevered on both sides of bridge</p> <p>end/top chrd: 2 channels w/ cover plate and lacing</p> <p>bottom chord: 2 rectangular eyebars</p> <p>vertical: 2 channels w/ lacing</p> <p>diagonal: 2 rectangular eyebars; 2 square eyebars w/ turnbuckles</p> <p>flr./decking: timber and steel wearing plates w/ timber stringers and tapered steel built-up floor beams</p> <p>substructure: steel-cased concrete piers w/ stone/timber retaining</p> <p>In late July 1901 the Idaho Springs City Council employed a local contractor named Kuyes to prepare plans and specifications for a steel bridge over Clear Creek on the east side of town. On the first of August bids were advertised for the superstructure, with the city to provide the substructure under a separate contract. Proposals were received from the Bullen Bridge Company, the M.J. Patterson Contracting Company and Kuyes and Work; the latter firm was awarded the construction contract for this medium-span pony truss. In September, Kuyes and Work was given the contract for the steel-tube substructure, and work continued on the bridge until its completion in February 1902. With its wide roadway and cantilevered sidewalks it has remained in use since and has recently been rehabilitated by the city.</p>						
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> RUINS	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> UNKNOWN	<input type="checkbox"/> NO
15. SIGNIFICANCE	The Miner Street Bridge is technologically notable for its skewed design. The only pin-connected pony truss in the survey with this feature, its unequally sloped end posts present a peculiarly asymmetrical profile. The bridge is one of the oldest of the pony trusses left in Colorado and is unusual with its wide roadway, tapered built-up floor beams and cantilevered sidewalks with decorative cast iron newel posts. Well maintained by the City of Idaho Springs, it still functions as the principal crossing of Clear Creek on the city's main street. The Miner Street Bridge is a significant early small-span roadway bridge.						
16. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> UNKNOWN						

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEYS	<input checked="" type="checkbox"/> NR	<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL
	<input type="checkbox"/> NHL	<input type="checkbox"/> HABS	<input type="checkbox"/> HAER
	<input type="checkbox"/> HAER-I	<input type="checkbox"/> OTHER	<input type="checkbox"/> INF'S

21. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

**Structure Inventory and Appraisal:** IDAHO SPGS. 01. Colorado Department of Highways, Denver Colorado.

Idaho Springs City Council Minutes: 9 May 1901 (Book 5, page 204), 27 July 1901 (Book 5, page 213), 1 August 1901 (Book 5, pages 214-15), 15 August 1901 (Book 5, page 218), 26 August 1901 (Book 5, page 215), 5 September 1901 (Book 5, page 220), 3 October 1901 (Book 5, page 226), 6 February 1902 (Book 5, page 236). Idaho Springs City Hall. Idaho Springs Colorado.

Dedication plate and bridge: "Erected by City of Idaho Springs AD 1902 John Trathen Mayor VI Naxon City Clerk".  
Field inspection by Clayton Fraser and Susan Cason. 19 November 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign Loveland Colorado

DATE  
8 January 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



1. SITE I.D. NO

2. NAME(S) OF STRUCTURE <b>Costilla Crossing Bridge; State Bridge</b>		CNO1	5. ORIGINAL USE roadway bridge	7. CLASSIFICATION BT&A: TRUSS: WROUGHT IRON	9. RATING 7 6 0 2
Bridge over Rio Grande River					10. DATE 1892
CDH: CON14.6E-00.0N					
3. SITE ADDRESS (STREET & NO) County Road over Rio Grande River 13.8 miles east of Antonito SE $\frac{1}{4}$ S22, T33N, R11E			6. PRESENT USE roadway bridge		
4. CITY/VICINITY Antonito vicinity		COUNTY Conejos	STATE Colorado	8. UTM ZONE 1 3	11. REGION RMRO
				10. EASTING 4 3 2 7 8 0	NORTHING 4 1 0 3 6 5 0
				12. SCALE 1:24	13. QUAD NAME Kiowa Hill
				14. OTHER	
12. OWNER/ADMIN ADDRESS Conejos County Courthouse		Box 127	15. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.		

13. OWNER/ADMIN ADDRESS  
Conejos County

14. CONDITION  
EXCELLENT  GOOD  FAIR  DETERIORATED  RUINS

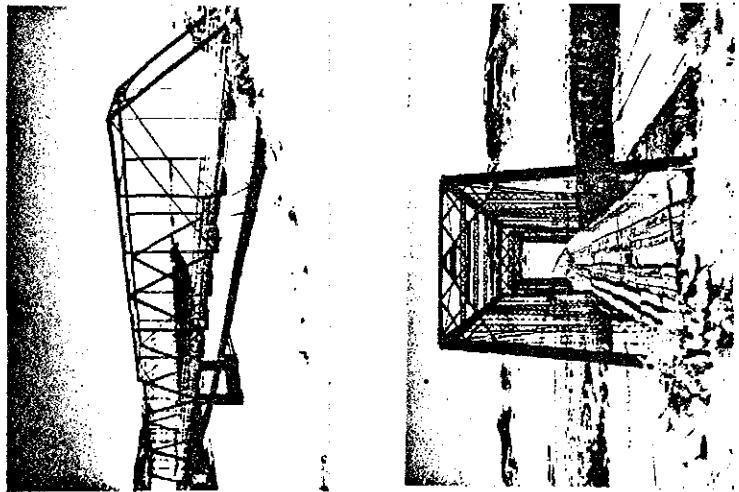
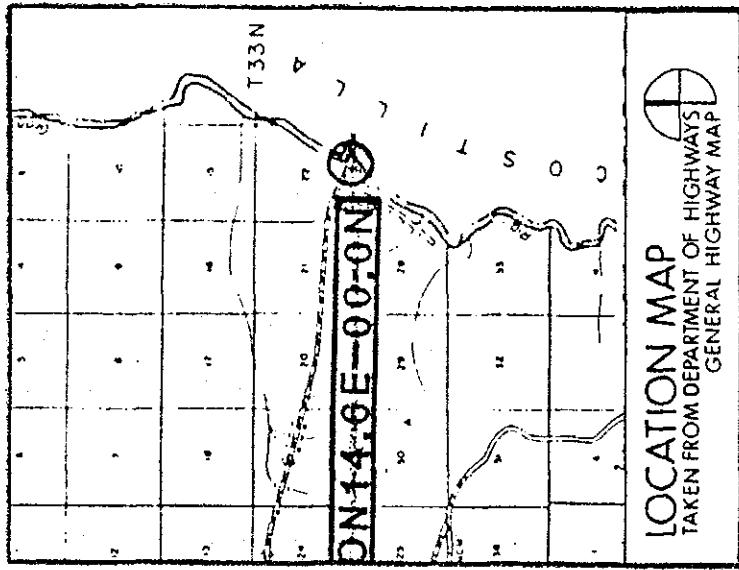
15. DANGER OF DEMOLITION?  YES  NO  UNKNOWN  
(SPECIFY THREAT)

In April 1891 the Colorado State Legislature appropriated \$10,000 for a bridge at the Costilla Crossing of the Rio Grande River between Costilla and Conejos counties. Rather than design the bridge as usual, the State Engineer solicited plans and specifications with the competitive bids from bridge companies. The response was unprecedented: 38 proposals were submitted. In February 1892, the construction contract was awarded to the Wrought Iron Bridge Company of Canton, Ohio, for \$8400. Using wrought and cast iron and steel components, the contractor erected this two-span Thatcher truss that year, completing it by the end of August. Once a pivotal crossing of the river in southern Colorado, the bridge now serves as an isolated and relatively minor span. Its condition is unaltered.

In April 1891 the Colorado State Legislature appropriated \$10,000 for a bridge at the Costilla Crossing of the Rio Grande River between Costilla and Conejos counties. Rather than design the bridge as usual, the State Engineer solicited plans and specifications with the competitive bids from bridge companies. The response was unprecedented: 38 proposals were submitted. In February 1892, the construction contract was awarded to the Wrought Iron Bridge Company of Canton, Ohio, for \$8400. Using wrought and cast iron and steel components, the contractor erected this two-span Thatcher truss that year, completing it by the end of August. Once a pivotal crossing of the river in southern Colorado, the bridge now serves as an isolated and relatively minor span. Its condition is unaltered.

16. SIGNIFICANCE  
Edwin Thatcher, Chief Engineer of the Keystone Bridge Company, patented a namesake truss in 1884. An innovative structural type, it never quite caught on, and Wrought Iron Bridge was apparently the only bridgebuilder to manufacture all-metal versions of it. With perhaps 30-40 ever built in the country, only three are known to exist today, including the Costilla Crossing Bridge. This bridge is historically significant as the oldest vehicular truss in Southern Colorado and one of the oldest in the state, the oldest still-functioning State Bridge, one of the few bridges left in Colorado with iron components and one of only two roadway bridges in the survey erected by Wrought Iron Bridge before that firm was absorbed to form the gargantuan American Bridge Company. In absolutely pristine condition, the Costilla Crossing Bridge is one of the last of its type - the state's most technologically significant vehicular bridge.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN

20. EXISTING SURVEYS  NA  NHL  HAER-1  HAER  NPS

COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: CON14.6E-00-00. Colorado Department of Highways, Denver Colorado.  
6th Biennial Report of the State Engineer, Colorado: 1891-1892. Denver, Colorado: Smith-Brooks Printing Company, 1892, pages 368-69.

Highway Planning Survey photograph, 30 September 1936. Colorado Department of Highways, Denver Colorado.  
Donald Jackson, HAER Historian. Oral interview with Clayton Fraser, 13 January 1984.  
Field inspection by Clayton Fraser, 3 January 1984.

Builder's plate on bridge portal: "1892 Built by Wrought Iron Bridge Co. Canton Ohio."  
"Organization of the American Bridge Company." Electrical World and Engineer, Vol. XXXVI, Number 1 (7 July 1900), page 38.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE  
13 January 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



## 1. SITE I.D. NO

2. NAME(S) OF STRUCTURE <b>Manzano Bridge</b> <b>Clifton Bridge (before move)</b>	CR13	5. ORIGINAL USE Roadway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL	9. RATING 7 6 0 3
CDH: L-21-B0				10. DATE 1911 m1950
3. SITE ADDRESS (STREET & NO) <b>State Highway 207 over Arkansas River</b> <b>1.1 miles north of Manzano</b> NE <sub>1/4</sub> S23, T22S, R58W		6. PRESENT USE highway bridge		
4. CITY/VICINITY <b>Manzano vicinity</b>	COUNTY Crowley	STATE Colorado	8. UTM ZONE 10	11. REGION RMRO
12. OWNER/ADMIN ADDRESS Colorado Department of Highways 4201 East Arkansas Avenue Denver Colorado	9. DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	10. OTHER 1:24 1:62.5	11. QUAD NAME	

## 13. DESCRIPTION AND BACKGROUND HISTORY

(INCLUDES ARCHITECTS, ENGINEERS, ETC.)

Rigid-connected, 18-panel steel Pennsylvania through truss

span number:

span length: 300'0"

overall length: 440'0"

overall height: 39'0"

clearance hgt.: 15'5"

roadway width: 19'4"

In early 1911 the Mesa County Board of Commissioners considered construction of two bridges across the Grand (Colorado) River - on Main Street in Grand Junction and in Clifton, a small community east of Grand Junction. Lacking funding for both, despite a special levy approved in 1909, the Board delayed the Grand Junction bridge and advertised for proposals for the Clifton Bridge in July 1911. Most of Colorado's principal bridge contractors were among the eleven responding companies, and the construction contract was awarded to the Patterson-Burghardt Bridge Company for \$12,990. This long-span Pennsylvania through truss was completed later that year. In 1950 it was moved to its present location over the Arkansas as a replacement for a three-span pinned truss built in 1908. At that time its portal bracing was replaced with exterior braces and the decking paved. Otherwise structurally intact, it is now scheduled for removal.

## 14. CONDITION

EXCELLENT

FAIR

GOOD

DETERIORATED

RUNS

## 15. SIGNIFICANCE

The Manzano (Clifton) Bridge has functioned as a locally important crossing over the two greatest rivers in the state: the Colorado and the Arkansas. Erected shortly after M.J. Patterson and Karl Burghardt had renamed their partnership, it is one of the earliest rigid-connected vehicular trusses in Colorado and one of seven riveted Pennsylvania through trusses left in public use in the state. But the aspect which distinguishes this bridge most is its length; with a simply supported span of 300', the Manzano Bridge is the longest-span roadway truss in Colorado. Originally funded by one of the counties and later moved to a State Highway crossing, it is one of the most significant bridges in the survey.

## 16. DANGER OF DEMOLITION?

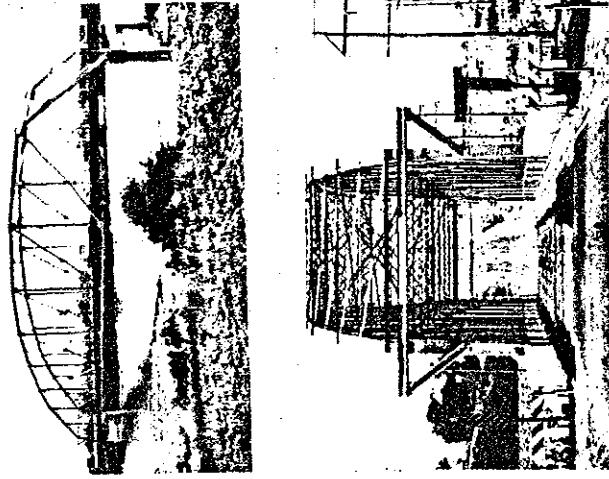
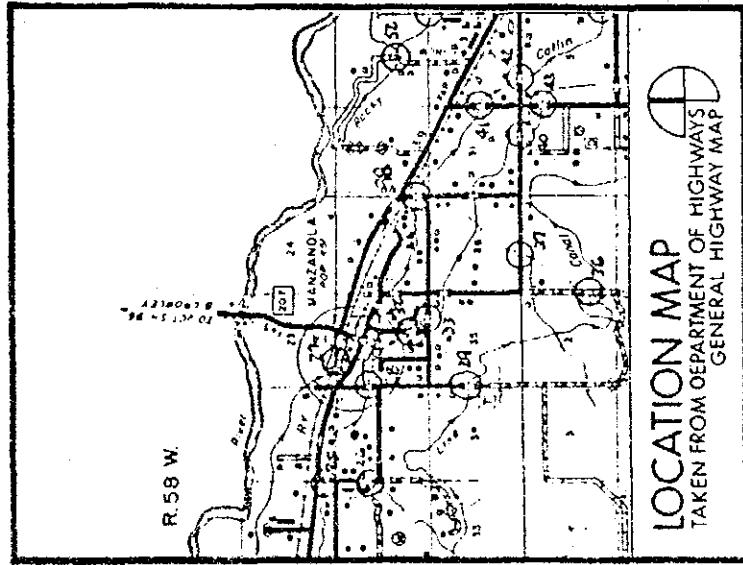
YES

NO

UNKNOWN

to be replaced

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			

Structure Inventory and Appraisal: I-21-BD. Colorado Department of Highways, Denver Colorado.  
Mesa County Commissioners' Minutes: 12 November 1909 (Book 4, page 273), 3 July 1911 (Book 5, page 6), 11 July 1911 (Book 5, page 8), 25 July 1911 (Book 5, page 19), 26 July 1911 (Book 5, page 20), 12 August 1911 (Book 5, page 26), 6 January 1912 (Book 5, page 63). Mesa County Courthouse, Grand Junction Colorado.

Otero County Commissioners' Minutes: 7 February 1950 (Book 10, page 207), 7 December 1950 (Book 10, page 247). Otero County Courthouse, La Junta Colorado.

Original drawings and specifications for original 1908 Manzanola Bridge (predecessor to this bridge, it was a 3-span pin-connected Pratt through truss). Drawn by Bert Beymer, County Surveyor. Dated 20 December 1907. Located at Otero County Clerk and Recorder's Vault, La Junta Colorado.

Field inspection by Clayton Fraser and Carl Hallberg, 18 August 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado DATE  
1 December 1983

This volume contains data pp. 113-210

## HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO			
2. NAME(S) OF STRUCTURE San Luis Bridge; State Bridge Bridge over Culebra Creek CDH: CSSMME-0.1-S159	CS01	5. ORIGINAL USE Roadway bridge	6. PRESENT USE Roadway bridge
3. SITE ADDRESS (STREET & NO) County Road SMME over Culebra Creek SW <sub>1/4</sub> S26, T34N, R72W			
4. CITY/VICINITY San Luis	COUNTY Costilla	STATE Colorado	STATE Colorado
12. OWNER/ADMIN ADDRESS Costilla County Courthouse	354 Main Street San Luis Colorado 81152		

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Segmental, reinforced concrete open spandrel arch

span number: 1  
span length: 57'0"  
overall length: 62'6"  
roadway width : 14'1"

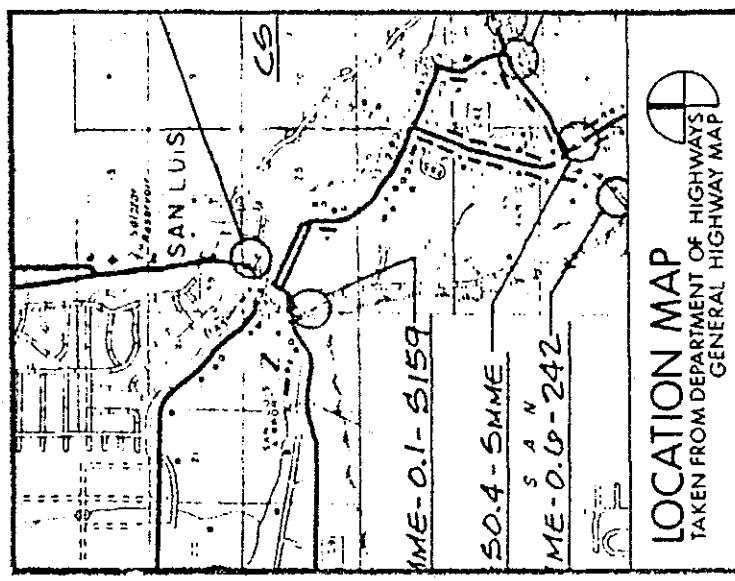
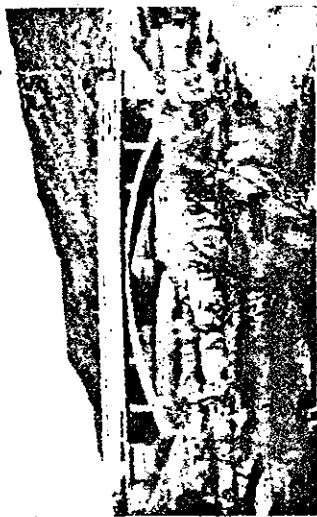
fir./decking: 5" thick monolithic concrete slab  
substructure: concrete retaining bulkheads  
guardrails : steel pipe

Colorado Historic Bridge Survey (Page 113)  
HAER No. CO-30

With an appropriation of \$2000 by the State Legislature, the State Engineer designed this reinforced concrete arch over Culebra Creek on the west edge of San Luis in 1910. Competitive bids were solicited and received in August; four bridge contractors submitted proposals: Missouri Valley Bridge and Iron Company of Leavenworth, Kansas, Midland Bridge Company of Kansas City, Missouri, Cuno Engineering and Construction Company and the M.F. Levy Construction Company of Denver. Low bidder at \$4700, Levy was awarded the construction contract, and the county made up the difference in appropriation. High water in the creek delayed excavation for the abutments until late February 1911, but the work progressed quickly thereafter, and the bridge was completed in May. The San Luis Bridge featured a single 57' open spandrel primary arch upon which bear six concrete columns supporting the floor slab. Once on State Highway 15, the bridge has since been relegated to county road status. There it remains in unaltered condition.

14. CONDITION <input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> GOOD <input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN (SPECIFY THREAT)
16. SIGNIFICANCE	The San Luis Bridge is technologically significant as the best-preserved early example in Colorado of a relatively little-used bridge type in the Rocky Mountains - the open-spandrel concrete arch. Although one other open arch in the state is older (the Bannock Street Bridge in Denver (DE24); 1908), it has been modified extensively, compromising its integrity. Historically, the San Luis Bridge is notable as a regionally important crossing - one of the few State Bridges remaining in Colorado.		

HAER  
COLO.  
47-  
47



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NAME	19. PUBLIC ACCESSIBILITY <input type="checkbox"/> YES, LIMITED <input checked="" type="checkbox"/> YES, UNLIMITED <input type="checkbox"/> NO <input type="checkbox"/> UNKNOWN	20. EXISTING SURVEY <input type="checkbox"/> NR <input type="checkbox"/> N.H.S. <input type="checkbox"/> HAER-1 <input type="checkbox"/> HAER <input type="checkbox"/> NPS <input type="checkbox"/> STATE
21. REFERENCES—HISTORICAL REFERENCES PERSONAL CONTACTS, AND/OR OTHER		

Structure Inventory and Appraisal 1: CSSMME-0.1-S159. Colorado Department of Highways, Denver Colorado.  
15th Biennial Report of the State Engineer, Colorado: 1909-1910. Denver Colorado: Smith-Brooks Printing Company, 1911, pages 144-45.  
16th Biennial Report of the State Engineer, Colorado: 1911-1912. Denver Colorado: Smith-Brooks Printing Company, 1913, page 108.

22. INVENTORED BY Clayton Fraser and Carl Hallberg	AFFILIATION Fraserdesign Loveland Colorado	DATE 17 January 1984
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# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



## 1. SITE ID. NO.

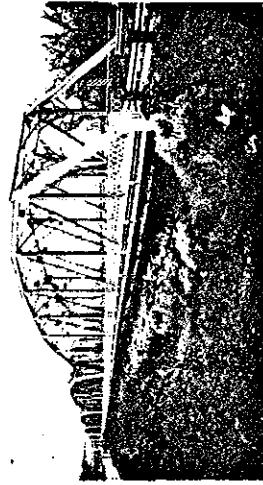
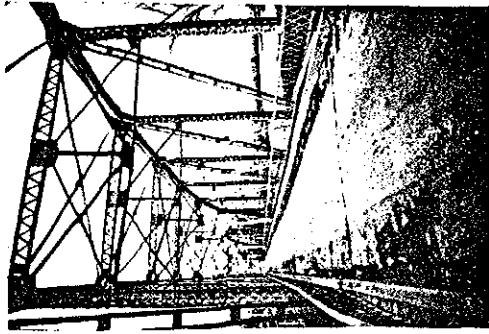
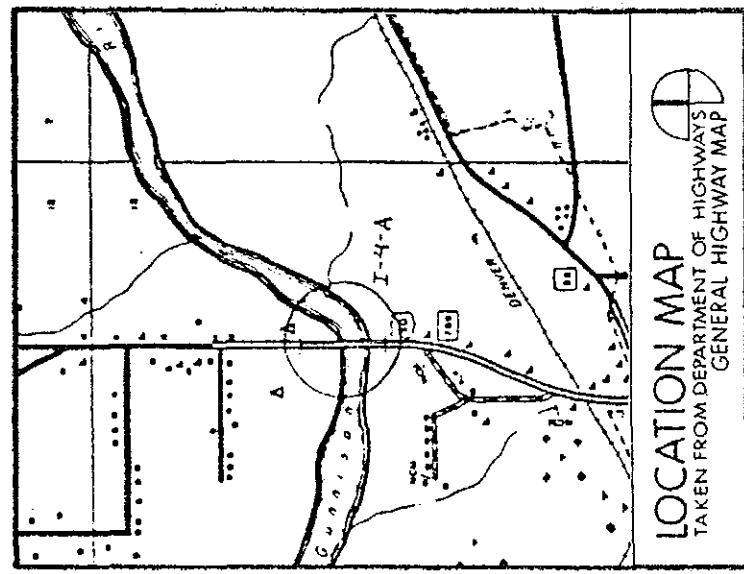
2. NAME(S) OF STRUCTURE Delta Bridge Bridge over Gunnison River CDH: I-04-A	DL08	5. ORIGINAL USE highway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL	9. RATING
3. SITE ADDRESS (STREET & NO.) U.S. Highway 50 over Gunnison River NE $\frac{1}{4}$ S13, T15S, R96W		6. PRESENT USE highway bridge		10. DATE 1923
4. CITY/VICINITY Delta	COUNTY Delta	STATE Colorado	8. UTM ZONE 1 2	11. REGION RMRO
12. OWNER/ADMIN ADDRESS Colorado Department of Highways	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.			

Rigid-connected, 8-panel steel Parker through truss  
span number: 4  
span length: 150' 0"  
overall length: 608' 0"  
overall height: 28' 0"  
clearance hgt.: 15' 11"  
roadway width: 20' 0"

In 1907 the Colorado State Legislature and Delta County Board of Commissioners combined appropriations to purchase the bridge over the Gunnison River on the north end of Delta from a private company for \$5000 - the only purchase of an existing bridge the state had ever made. By summer 1923, the decision to replace that original span had been made and a new steel bridge designed by the State Highway Department. The construction contract was awarded in October to Grand Junction contractors Winterburn and Lumsden for \$99,309. Using steel components fabricated by the Midwest Steel and Iron Company and Minnesota-Moline Power Implement Company, they completed this four-span Parker through truss in May 1924, an event marked by a celebration in the city. The bridge has remained in place unaltered since.

14. CONDITION <input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> GOOD <input type="checkbox"/> FAIR	15. DANGER OF DEMOLITION? <input type="checkbox"/> YES <input checked="" type="checkbox"/> UNKNOWN (SPECIFY THREAT)
16. SIGNIFICANCE During the 1920s and 1930s the Colorado State Highway Department designed and contracted for two basic types of steel highway trusses: the Cameback pony for spans 125' and under and the Parker through for spans 125' and over. Although other generic types such as the Pratt through or the Pennsylvania through were sometimes used, the riveted Parker was the design of choice for long-span highway crossings. Two multi-span combinations of that type remain in use on the state highway system - the Fifth Street Bridge in Grand Junction (ME09) and the Delta Bridge. This one predates the other by ten years. Both are significant as unusual multiple-span examples of a common highway bridge type. Historically this bridge is significant as a regionally important crossing of the Gunnison River - the site of the only pursued State Bridge.	GP0 : 1982 0 - 393-339

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEY			
<input type="checkbox"/> NR		<input type="checkbox"/> COUNTY	<input type="checkbox"/> NPS
<input type="checkbox"/> LOCAL		<input type="checkbox"/> HAER	<input type="checkbox"/> STATE
21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			

Structure Inventory and Appraisal: I-04-A. Colorado Department of Highways, Denver Colorado.  
Delta County Commissioners' Minutes: 5 January 1901 (Book 2, page 2), 8 January 1903 (Book 2, page 124), 9 April 1907 (Book 2, page 340). Delta County Courthouse, Delta Colorado.  
Vertical files of State Engineer: Delta County Bridge. Colorado Department of Highways, Denver Colorado.  
"Bids Received During September." Colorado Highways, Vol. 2, Number 10 (October 1923). page 18.  
"Reports from the Divisions," Colorado Highways, Vol. 3, Number 5 (May 1924). pages 14-15.  
"Reports from the Divisions," Colorado Highways, Vol. 3, Number 6 (June 1924). pages 12-13.  
Field inspection by Clayton Fraser and Susan Cason, 18 November 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

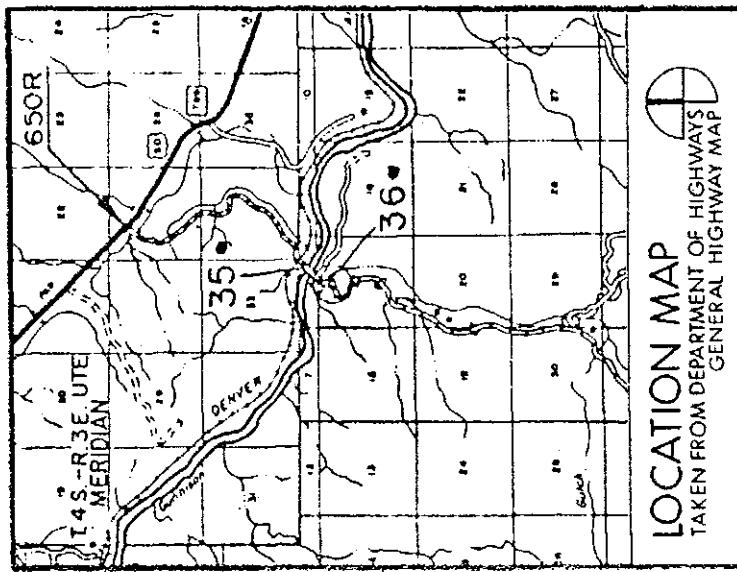
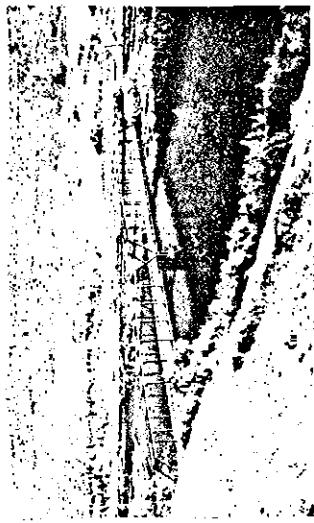
AFFILIATION  
Fraserdesign Loveland Colorado

DATE  
18 January 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO.												
2. NAME(S) OF STRUCTURE	Escalante Canon Bridge Saxton Bridge; State Bridge CDH: DEL50R-2.8-35											
3. SITE ADDRESS (STREET & NO.)	County Road 650R over Gunnison River 10.3 miles west of Delta SE <sup>1/4</sup> S8, T15S, R12W											
4. CITY/VICINITY	Delta vicinity		COUNTY		STATE		CITY		COURTHOUSE		5th and Palmer	
5. ORIGINAL USE	DL07		roadway bridge		7. CLASSIFICATION		NORTHING		7		6	
6. PRESENT USE			roadway bridge		BT&A: TRUSS: STEEL				0		3	
7. UTM ZONE			1		EASTING				1890		10. DATE	
8. UTM ZONE			2		7		3		1908		m1908	
9. RATING					8		0		1938		m1938	
10. REGION											11. REGION	
11. RMRO												
12. OWNER/ADMIN ADDRESS	Delta County Courthouse 5th and Palmer Delta Colorado 81416											
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	<p>Pin-connected, 11- and 12-panel steel Camelback through truss</p> <p>span number: 2</p> <p>span length: 196'0" (12-p); 180'0" (11-p)</p> <p>overall length: 383'0"</p> <p>overall height: 25'0"</p> <p>clearance hgt.: 13'5"</p> <p>roadway width: 15'7"</p> <p>In 1890 the Colorado State Legislature appropriated \$20,000 for its sixth wagon bridge - over the Gunnison River near Delta. The State Engineer contracted with the Bullen Bridge Company of Pueblo to erect this unequal-two-span Camelback through truss, and with components rolled by the Oliver Steel Company the bridge was completed that year. In 1908 local residents formed a co-op called the Union Bridge Company and contracted Bullen, whose firm's name had been changed to the Pueblo Bridge Company, to move the trusses to another crossing of the Gunnison near Read. Delta County assumed possession of the bridge the following year, repaying Union in installments. Called the Saxton Bridge, it was reportedly washed out, salvaged, dismantled and moved to its present location in Escalante Canon around 1938. There it remains in use as an isolated crossing, with the steel for its replacement on the ground nearby.</p>											
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	<input type="checkbox"/> DEMOLITION	<input type="checkbox"/> YES (SPECIFY THREAT)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN	to be replaced		
15. SIGNIFICANCE												



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN  
20. EXISTING SURVEYS  NPS  NHL  HABS  HAER-1  HAER  NPS  
 COUNTY  LOCAL  OTHER

21. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: DEL650R-2.8-35. Colorado Department of Highways, Denver Colorado.

Delta County Commissioners' Minutes: 20 January 1908 (Book 2, page 358), 10 November 1908 (Book 2, pages 385-86), 4 January 1909 (Book 2, page 387). Delta County Courthouse, Delta Colorado.

5th Biennial Report of the State Engineer, Colorado: 1889-1890, Denver Colorado: Collier and Cleaveland Lithography Company, 1891. page 587.

Milo Morse, Delta County Road Foreman. Oral interview with Clayton Fraser, 21 November 1983.  
Field inspection by Clayton Fraser and Susan Cason, 17 November 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign Loveland Colorado

DATE  
18 January 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240


1. SITE I.D. NO

2. NAME(S) OF STRUCTURE Hotchkiss Bridge Bridge over North Fork River CDH: DEL3400R-0.5-49	3. SITE ADDRESS (STREET & NO) County Road 3400R over North Fork of the Gunnison River S1/2 S31, T14S, R92W	4. CITY/VICINITY Hotchkiss	5. OWNER/ADMIN ADDRESS Delta County	6. ORIGINAL USE roadway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL	8. RATING 7 6 0 3 J*	9. DATE 1911
				6. PRESENT USE roadway bridge	9. UTM ZONE 1 3	10. REGION RMRO	
					11. EASTING 2 6 4 6 3 5 4 2 9 2 7 2 0		
					12. NORTHING QUAD NAME Hotchkiss		
				STATE Colorado	SCALE 1:24 OTHER 1:62.5		

13. DESCRIPTION AND BACKGROUND HISTORY (INCLUDING CONSTRUCTION DATES), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND INFORMATION (BUILDERS, ARCHITECTS, ENGINEERS, ETC.)

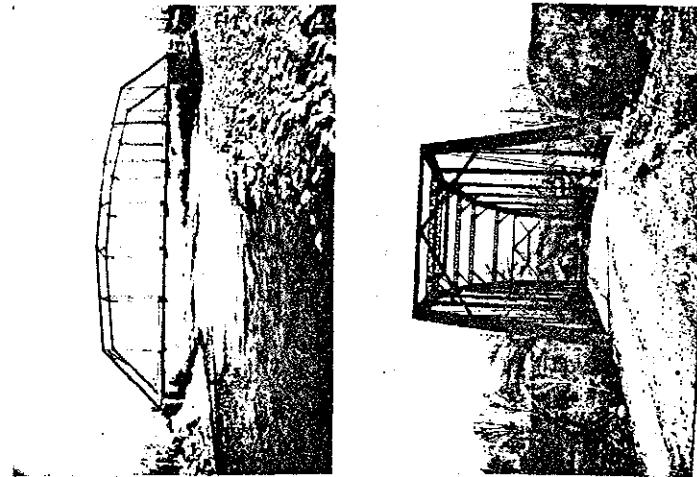
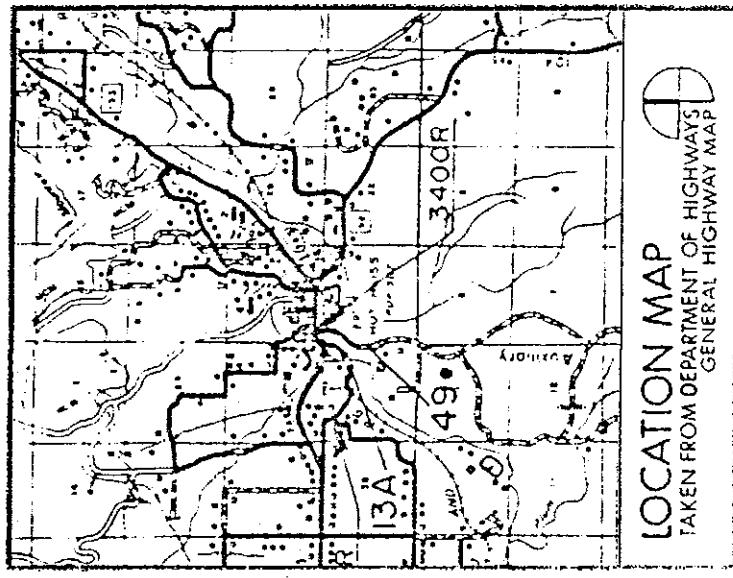
Pin-connected, 8-panel steel Camelback through truss  
Span number: 1  
Span length: 150'8"  
Overall length: 151'0"  
Overall height: 24'9"  
Clearance hgt.: 12'8"  
Roadway width: 16'1"

Besieged with citizens' petitions for bridges at Paonia, Hotchkiss, Appleton and Roubideau in 1909, the Delta County Board of Commissioners immediately began consideration of a bridge at Roubideau (DL01). Two years later, in October 1911, bids were advertised for the bridge near Paonia (DL02) and this bridge at Hotchkiss. Proposals were received from all of the state's principal bridgebuilders: Charles G. Sheely, M.J. Levy, M.F. Patterson and Fred Bullen's Pueblo Bridge Company. With a bid of \$12,990 for both bridges, Pueblo was awarded the construction contract, and before the year's end the work had begun. This medium-span through truss was completed by August 1912. It remains in use at the same location, with sub- and superstructure unaltered and in good condition.

14. CONDITION EXCELLENT	FAIR	GOOD	DETERIORATED	RUINS	DANGER OF DEMOLITION? (SPECIFY THREAT)	YES	NO	UNKNOWN
15. SIGNIFICANCE								

Erected using steel components rolled by the Lackawanna Steel Company, the Hotchkiss Bridge was a locally important crossing of the North Fork River, built by Colorado's most prolific bridge contractor, the Pueblo Bridge Company. It is one of four pin-connected vehicular Camelback through trusses remaining in the state (others: BE01, DL07 and OT05), and as such has some technological significance.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEYS			
		<input type="checkbox"/> NR	<input type="checkbox"/> NHL
		<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL
21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			
<b>Structure Inventory and Appraisal:</b> DEL3400R-0.5-49. Colorado Department of Highways, Denver Colorado.			

Delta County Commissioners' Minutes: 20 April 1909 (Book 2, page 405), 11 October 1911 (Book 2, page 561), 30 October 1911 (Book 2, pages 569-70), 19 December 1911 (Book 2, page 57D), 4 April 1912 (Book 2, page 583), 7 July 1912 (Book 2, page 588), 8 August 1912 (Book 2, page 590). Delta County Courthouse, Delta Colorado.

Milo Morse, Delta County Road Foreman. Oral interview with Clayton Fraser, 21 November 1983.  
Field inspection by Clayton Fraser and Susan Cason. 17 November 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign

DATE  
24 November 1983

Loveland Colorado

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO.		5. ORIGINAL USE	7. CLASSIFICATION	9. RATING
2. NAME(S) OF STRUCTURE	DL01	roadway bridge	BT&A: TRUSS: STEEL	7 6 0 3
Bridge over Gunnison River				
CDH: DELG50R-2.2-11				
3. SITE ADDRESS (STREET & NO.)	County Road G50R over Gunnison River	6. PRESENT USE		10. DATE
3.9 miles west of Delta	roadway bridge			1911
SE $\frac{1}{4}$ S16, T15S, R96W				
4. CITY/VICINITY	Delta Vicinity	STATE	EASTING	NORTHING
12. OWNER/ADMIN ADDRESS	Delta County	COUNTY	7 1 2 5 0 5 2 5 4 2 9 2 7 2 0	11. REGION
Delta Vicinity	Colorado	SCALE	1:24 1:62.5	RMRO
Delta County	Delta County Courthouse	QUAD NAME	OTHER	Delta
5th and Palmer	Delta Colorado 81416			

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Rigid-connected, 12-panel steel Warren through truss with polygonal top chord and alternating verticals

span number: 1  
 span length: 192' 2"  
 overall length: 194' 0"  
 overall height: 23' 1"  
 clearance hgt.: 13' 11"  
 roadway width : 15' 2"

span number: 1  
 span length: 192' 2"  
 overall length: 194' 0"  
 overall height: 23' 1"  
 clearance hgt.: 13' 11"  
 roadway width : 15' 2"

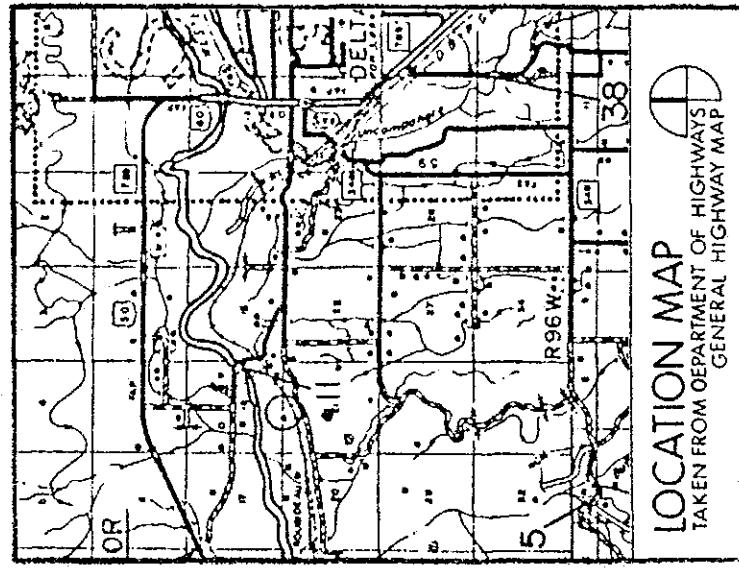
end/top chrd: 2 channels w/ cover plate and lacing  
 bottom chord: 2 angles w/ batten plates  
 vertical: 2 angles w/ batten plates  
 diagonal: 2 channels w/ lacing; 4 angles w/ batten plates  
 flr./decking: asphalt over timber deck w/ timber stringers  
 substructure: concrete wingwalls; concrete abutment w/ timber wings

Besieged with citizens' petitions for bridges at Paonia, Hotchkiss, Appleton and Roubideau in 1909, the Delta County Board of Commissioners immediately began consideration of a bridge over the Gunnison River near the Roubideau switch of the D&RG RR. After nearly two years of discussion and visits to the site, the State Legislature appropriated \$3750 toward construction of the bridge, and the State Engineer prepared plans and specifications for it. The construction contract was awarded to the Pueblo Bridge Company, the state's most prolific bridgebuilder, early in 1911. Using steel components forged by Lackawanna and manufactured by the Milwaukee Bridge Company, Pueblo Bridge completed this long-span Warren truss in September. The bridge has remained in place since, unaltered and in good condition.

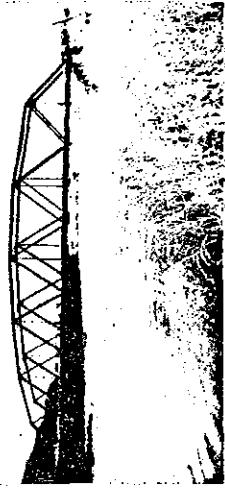
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> PETERIORATED	<input type="checkbox"/> RUINS	<input type="checkbox"/> DANGER OF DEMOLITION (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN
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16. SIGNIFICANCE

The truss drawn by the State Engineer's office was a standard-design double-intersected Warren, identical to the bridges being built at the same time at Una, Lacy and Alamosa. How the design was changed to the configuration that was built is unclear; perhaps the new design came from Fred Bullen's Pueblo Bridge Company, which regularly submitted alternate plans during bidding. A somewhat esoteric variation on the basic Warren truss form, it was not reproduced in through truss form and is unique in the survey. The Roubideau Bridge is significant as a locally important crossing of the Gunnison River, as a technologically interesting roadway truss type and as one of several bridges in Colorado erected by the state's pre-eminent early bridge contractor.



17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  NO  UNKNOWN  
20. EXISTING SURVEY  NA  COUNTY  NHL  HABS  HAER  NFPS  STATE  
 LOCAL  OTHER

21. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  
Structure Inventory and Appraisal: DEL650R-2.2-11. Colorado Department of Highways, Denver Colorado.  
Delta County Commissioners' Minutes: 9 January 1909 (Book 2, page 356), 20 April 1909 (Book 2, page 405), 21 April 1909 (Book 2, page 407), 7 September 1909 (Book 2, page 431), 26 January 1910 (Book 2, page 467), 1 March 1910 (Book 2, page 486), 4 October 1910 (Book 2, page 517), 26 November 1910 (Book 2, page 525), 27 February 1911 (Book 2, page 543), 7 March 1911 (Book 2, page 545). Delta County Courthouse, Delta Colorado.  
16th Biennial Report of the State Engineer, Colorado: 1911-1912, Denver Colorado: Smith-Brooks Printing Company, 1913. page 109.

Vertical Files of State Engineer: Delta County Bridge, J-4-B. Colorado Department of Highways, Denver Colorado.  
Field inspection by Clayton Fraser and Susan Cason. 17 November 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

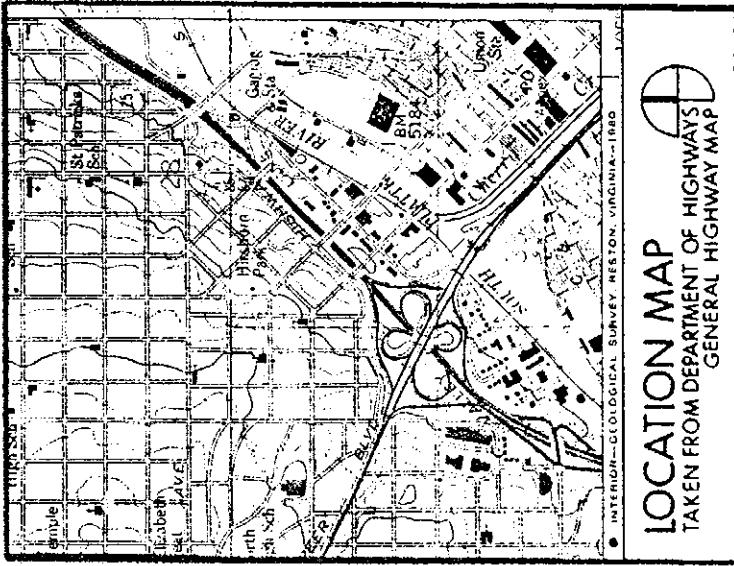
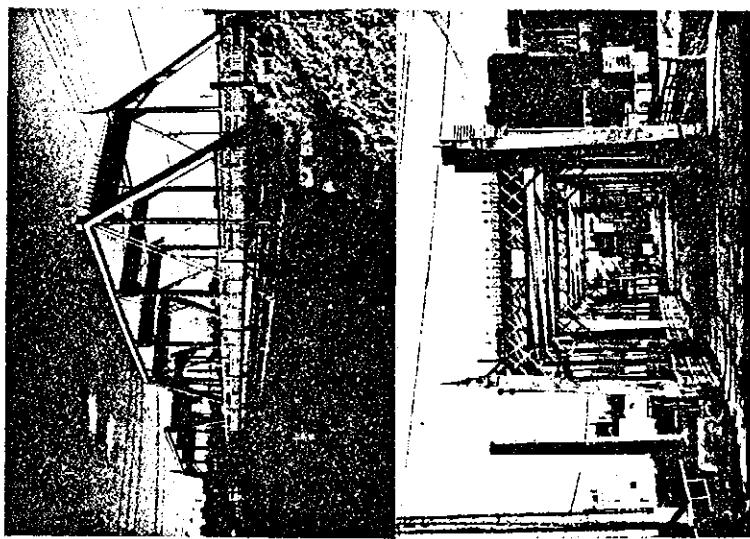
DATE 29 November 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO																					
2. NAME(S) OF STRUCTURE																					
19th Street Bridge	DE01	5. ORIGINAL USE	roadway bridge		6. PRESENT USE	roadway bridge		7. CLASSIFICATION	BT&A: TRUSS: STEEL												
Bridge over South Platte River									7	6	0	3									
CDH: D-02-PR-060									4												
3. SITE ADDRESS (STREET & NO)																					
19th Street over South Platte River									10. DATE	1888											
SE $\frac{1}{4}$ S28, T3S, R68W																					
4. CITY/VICINITY	COUNTY	STATE						8. UTM ZONE	EASTING	NORTHING	11. REGION										
Denver	Denver	Colorado						1	3	4	9	7	0	5	4	4	0	0	0	0	RMRD
12. OWNER/ADMIN ADDRESS																					
City of Denver	City Hall	1437 Bannock	Denver Colorado 80202		9. RATING			SCALE	1:24	1:625	QUAD NAME		Arvada								
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.																					
<p><b>Pin-connected, 5-panel steel Pratt through truss</b></p> <p>span number: 2</p> <p>span length: 101'0"</p> <p>overall length: 206'0"</p> <p>overall height: 19'0"</p> <p>clearance hgt.: 17'5"</p> <p>roadway width : 22'6"</p> <p>end/top chrd: 2 channels w/ cover plate and lacing</p> <p>bottom chord: 2 rectangular eyebars</p> <p>vertical: 2 channels w/ lacing</p> <p>diagonal: 2 rectangular eyebars; 2 round eyebars w/ turnbuckles</p> <p>fir./decking: asphalt over corrugated steel</p> <p>substructure: solid stone ashlar pier w/ stepped stone wingwalls</p>																					
<p>In the aftermath of flooding along the South Platte, Arapahoe County and the City of Denver began to replace damaged bridges during the autumn of 1887. The county re-erected eight timber pile crossings between October and July and the city contracted with the Missouri Valley Bridge and Iron Company of Leavenworth, Kansas, to replace the ten-year-old span across the Platte at 19th Street. This two-span Pratt through truss was erected for a total reported cost of over \$24,000 in 1888. Featuring unusually deep I-beam upper struts, latticed portals with decorative cresting and finials, and cantilevered sidewalks with cast iron newels and latticing, the bridge has stood in place since. The timber decking was replaced with corrugated steel after flooding in 1965, but it remains otherwise unaltered.</p>																					
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN												
16. SIGNIFICANCE																					
<p>It was after the flood of 1878 that metal bridges - perhaps the first in the state - began being built over the Platte River in Denver. Among these earliest spans the 19th Street Bridge is the only remaining, and is the earliest original vehicular bridge in public use in Colorado. An unusually configured example of the most common early roadway truss type, it is also the most heavily ornamented among the state's trusses. The 19th Street Bridge has been altered little and is relatively well-preserved; the oldest bridge in the survey associated with A.J. Tuftlock's national bridge-building firm, it is one of Colorado's most significant vehicular spans.</p>																					

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
21 REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			
	<input type="checkbox"/> NA	<input type="checkbox"/> NHL	<input type="checkbox"/> HAER
	<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL	<input type="checkbox"/> NPS
		<input type="checkbox"/> OTHER	<input type="checkbox"/> STATE

Structure Inventory and Appraisal: D-02-PR-060. Colorado Department of Highways, Denver Colorado.

Max Woodfin. "Bridging the Years with the Old and the New in Denver," Rocky Mountain News, 23 July 1978.  
"Twenty Years Ago Today," Denver Times, 15 August 1898. page 4.

Arapahoe County Commissioners' Minutes: 25 October 1887 (Book 8, page 36), 16 November 1887 (Book 8, page 46), 13 December 1887 (Book 8, page 72), 9 March 1888 (Book 8, page 147), 14 June 1888 (Book 8, page 219), 9 July 1888 (Book 8, page 230), 30 July 1888 (Book 8, page 243), State Archives, Denver Colorado.  
Builder's plate on bridge portal: "Built 1888 by Mo. Valley Bridge & Iron Works Leavenworth Kansas A.J. Tullock & Company Proprietors".

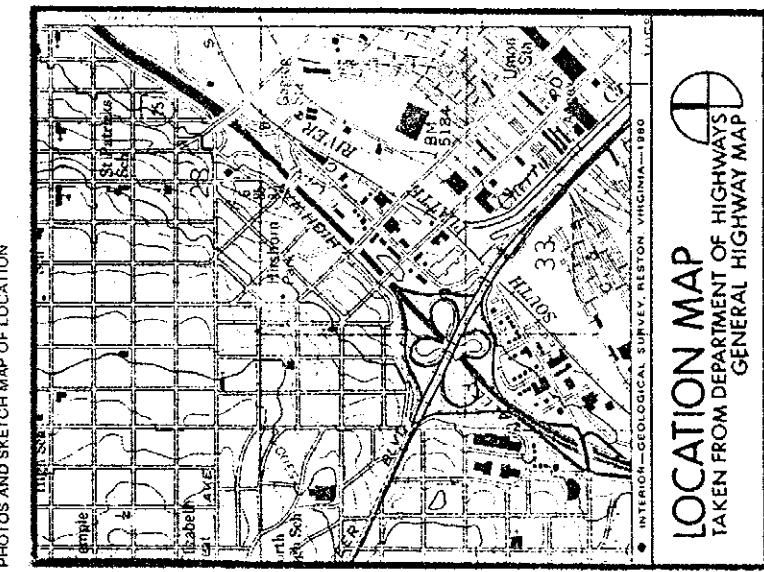
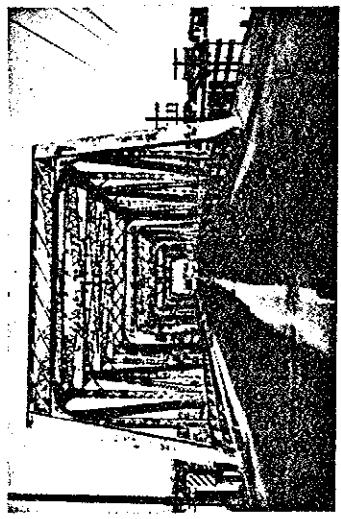
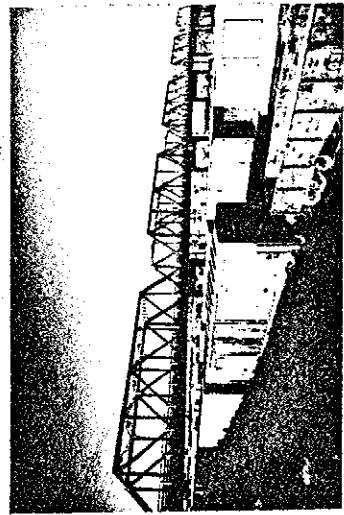
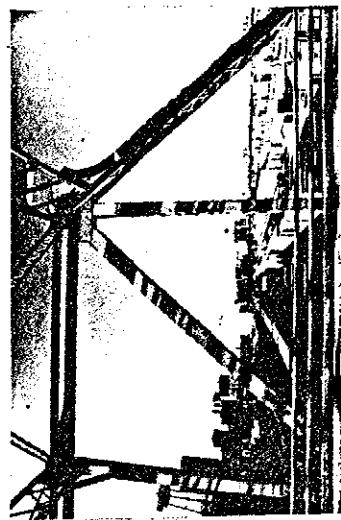
Field inspection by Clayton Fraser and Susan Cason, 12 November 1983.

22. INVENTORIED BY Clayton Fraser and Carl Hallberg	AFFILIATION Fraserdesign	DATE Loveland Colorado 1 March 1984
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# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO													
2. NAME(S) OF STRUCTURE	20th Street Viaduct		Bridge over South Platte River		DE03		5. ORIGINAL USE		7. CLASSIFICATION		9. RATING		
CDH: 0-03-V-050	Bridge over South Platte River		Roadway viaduct		BT&A: TRUSS: STEEL		7		6		0		
3. SITE ADDRESS (STREET & NO)	20th Street over I25, railroads and South Platte River		SE <sub>4</sub> S28, T3S, R68W		6. PRESENT USE		8T&A: BEAM : STEEL		7		5		
4. CITY/VICINITY	Denver		COUNTY		Roadway viaduct		8. UTM ZONE		NORTHING		10. DATE		
12. OWNER/ADMIN ADDRESS	City of Denver		STATE		Colorado		1. UTM ZONE		4		1909		
							2. EASTING		9				
							3. NORTHING		8				
							4. OTHER		4				
							SCALE		0				
							1:24		0				
							1:62.5		9				
							OTHER		0				
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	Multiple-span steel deck girder / through truss viaduct												
	span number: 85												
	span length: 150'0"												
	overall length: 4251'0"												
	overall height: 19'6"												
	clearance hgt.: 14'0"												
	roadway width : 34'0"												
	span number: 85												
	span length: 150'0"												
	overall length: 4251'0"												
	overall height: 19'6"												
	clearance hgt.: 14'0"												
	roadway width : 34'0"												
	enc/top chrd: 2 built-up channels w/ cover plate and double lacing												
	bottom chord: 2 channels w/ double lacing												
	vertical: 2 channels w/ lacing												
	diagonal: 2 channels w/ lacing												
	flr./decking: asphalt over corrugated steel w/ steel floor beams												
	substructure: concrete spread footings												
	Late in 1908 Mayor Speer negotiated a settlement among the City of Denver and the Union Pacific; Chicago, Burlington and Quincy; Colorado and Southern; and the Denver, Northwest and Pacific Railroads to fund a major new viaduct over the railroads' tracks and the South Platte River at 20th Street. Denver engineer H.S. Crocker designed the bridge, and the Blodget Construction Company began channeling the river and pouring foundations in April 1909. The Milwaukee Bridge Company was awarded the contract for the superstructure, and work was completed in 1910 for an aggregate cost of \$575,000. Featuring multiple spans of skewed, rigid-connected Warren through trusses and deck girders on laced steel trestles, the viaduct has functioned in-place under heavy traffic since, with only minor alteration.												
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)		<input type="checkbox"/> YES		<input type="checkbox"/> NO		<input checked="" type="checkbox"/> UNKNOWN	
16. SIGNIFICANCE	Erected in 1909 and over three-quarters of a mile long, the 20th Street Viaduct is the oldest and longest of Colorado's urban trussed viaducts; it has served as a major access to the Denver central business district since its completion. The Warren trusses which comprise several spans of it are among the earliest riveted trusses in the state and, with the 23rd Street Viaduct (DE02), are the only examples of their configuration in the survey. A distinctly urban bridge form - one of five of its type in Colorado - the 20th Street Viaduct is a significant early structure.												



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NAME	20. EXISTING SURVEYS <input type="checkbox"/> NLR <input type="checkbox"/> NHLS <input type="checkbox"/> HAHS <input type="checkbox"/> HAER-1 <input type="checkbox"/> HAER <input type="checkbox"/> NPS <input type="checkbox"/> STATE <input type="checkbox"/> COUNTY <input type="checkbox"/> LOCAL <input type="checkbox"/> OTHER
19. PUBLIC ACCESSIBILITY <input type="checkbox"/> YES, UNLIMITED <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> NO	21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

- Structure Inventory and Appraisal: D-03-V-050. Colorado Department of Highways, Denver Colorado.**
- "Twentieth Street Viaduct." Denver Post, 9 April 1909. page 3.
  - "Contracts Let for Twentieth Street Viaduct," Denver Times, 26 June 1909. page 3.
  - "Denver Has \$1,500,000 Invested in Bridges and Viaducts." Denver Municipal Facts, Vol. I, Number 41 (27 November 1909). pages 3-5, 15.
  - "Twentieth Street Viaduct." Denver Municipal Facts, Vol. III, Number 53 (30 December 1911). page 13.
  - "City and County of Denver Inventory of Bridges," Design Engineering Division, City and County of Denver. Unpublished report, 1981.
  - Field inspection by Clayton Fraser and Susan Cason, 29 January 1984.

22. INVENTORIED BY Clayton Fraser and Carl Hallberg	AFFILIATION Fraserdesign	Loveland Colorado	DATE 1 March 1984
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# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO			
2. NAME(S) OF STRUCTURE	Broadway Bridge Bridge over Cherry Creek		
CDH:	D-01-CC-180		
3. SITE ADDRESS (STREET & NO)	8 Broadway Avenue over Cherry Creek at Speer Avenue SE $\frac{1}{4}$ S3, 14S, R68W		
4. CITY/VICINITY	Denver		
12. OWNER/ADMIN ADDRESS	City of Denver		
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	<p><b>Skewed, steel open-web deck girder</b></p> <p>span length: 122' 4"      overall length: 129' 0"      roadway width : 72' 0"</p>		

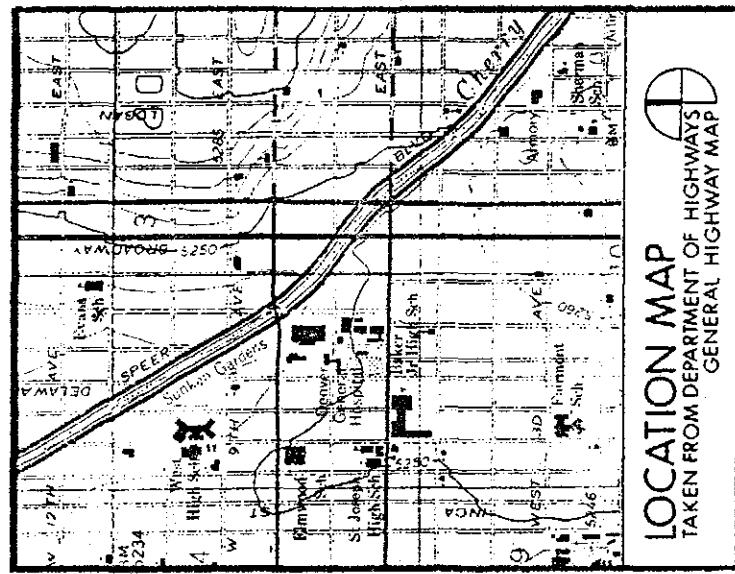
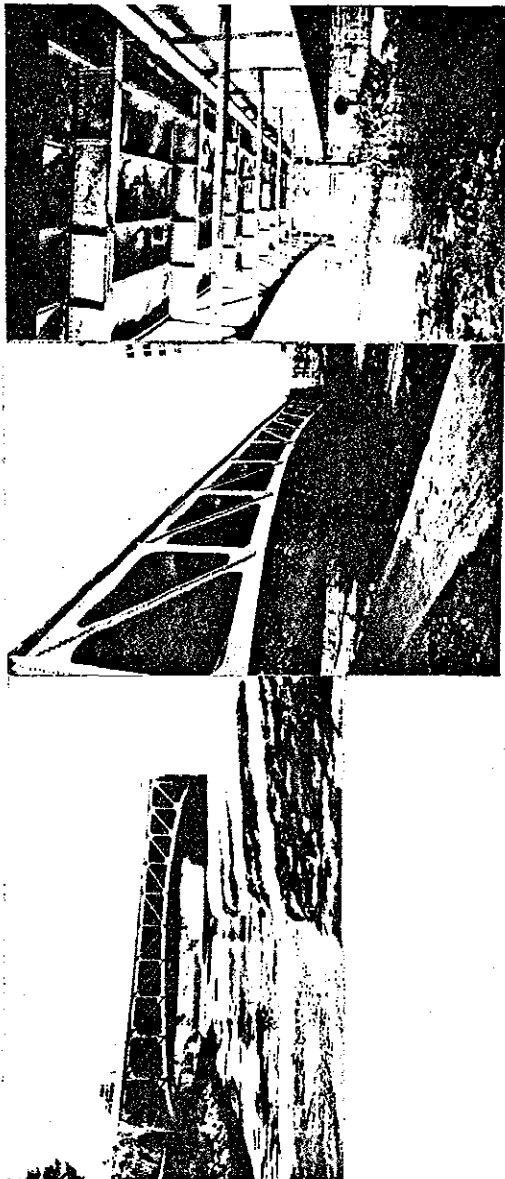
14. CONDITION  EXCELLENT  GOOD  FAIR  DETERIORATED

5. ORIGINAL USE	DE06	roadway/tramway bridge	7. CLASSIFICATION	BT&A: BEAM: STEEL	9. RATING	7	5	8	4
6. PRESENT USE		roadway bridge	a. UTM ZONE	1 3	b. EASTING				
			c. NORTHING	5 0 1 2 3 0 4 3 9 7 1 4 5	d. QUAD NAME	RMRD			
			e. OTHER	1:24 1:62.5					
STATE	Colorado	SCALE	1:24						
COUNTY	Denver								
14. CONDITION	<input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> GOOD <input type="checkbox"/> FAIR <input type="checkbox"/> DETERIORATED	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> RUINS	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN			
16. SIGNIFICANCE	<p>The Broadway 8bridge is one of several built in the 1890s jointly by the City of Denver and the various tram companies to serve vehicular, pedestrian, and streetcar traffic. It is one of few which today remain in use. Its arched open-web outside girders reflect the prevailing aesthetic of the time which held the arch to be the highest form of bridge design, and it is unique in Colorado for its deck girder subtype. A significant urban span - one of the last remaining of many built in the 19th century - the Broadway Bridge is one of the more important of Colorado's roadway bridges.</p>								

Colorado Historic Bridge Survey (Page 127)  
HAER No. CO-30

main girders : trussed open-web outside girders; solid plate inside floor decking: concrete slab over steel floor beams substructure : coursed stone ashlar retaining walls

As Arapahoe County was widening South Broadway in early 1895, the City of Denver and the Denver Tramway Company were formulating plans for a jointly funded major bridge on North Broadway over Cherry Creek. Competitive bids for the steel superstructure were opened in March, and proposals were received from ten regional or national firms: the King 8bridge Company, Wrought Iron Bridge Company, Pittsburgh Bridge Company, Bullen Bridge Company, American Bridge Works, Pennsylvania Bridge Company, Fow森 and Blodgett, Mississippi Valley Bridge Company, Toledo Bridge Company and the Youngstown (Ohio) Bridge Company. Youngstown was awarded the construction contract for \$29,500. Construction on the masonry abutments began later that spring, and after several delays, the bridge was completed in April 1896. Skewed nearly 31°, it features latticed outside girders, 14' 3" deep at the abutments, which arch to an 8' 3" depth at midspan; the four interior girders are 10' deep built-up plates with angle flanges and web stiffeners. Although the cast iron rails have been removed and the deck altered, the bridge functions essentially unaltered today under heavy traffic.



17 PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  NO  UNKNOWN

20. EXISTING SURVEY  NR  MHS  NHL  HAER  OTHER  COUNTY  LOCAL  STATE  NPS  HAER-1

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  
STRUCTURE INVENTORY AND APPRAISAL: D-01-CC-180. COLORADO DEPARTMENT OF HIGHWAYS, DENVER COLORADO.  
"BROADWAY BRIDGE BIDS," ROCKY MOUNTAIN NEWS, 27 MARCH 1895. PAGE 4.  
"BROADWAY BRIDGE," ROCKY MOUNTAIN NEWS, 10 MARCH 1896. PAGE 8.  
"DENVER HAS \$1,500,000 INVESTED IN BRIDGES AND VIADUCTS," DENVER MUNICIPAL FACTS, VOL. 1, NUMBER 41 (27 NOVEMBER 1909). PAGES 3-5, 15.  
ARAPAHOE COUNTY COMMISSIONERS' MINUTES: 2 FEBRUARY 1895 (BOOK 12, PAGE 605), STATE ARCHIVES, DENVER COLORADO.  
FIELD INSPECTION BY CLAYTON FRASER AND SUSAN CASON, 29 JANUARY 1984.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

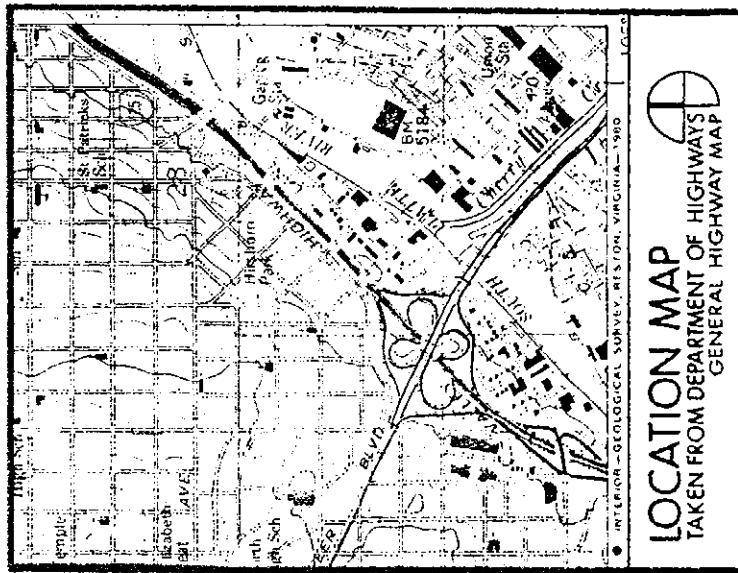
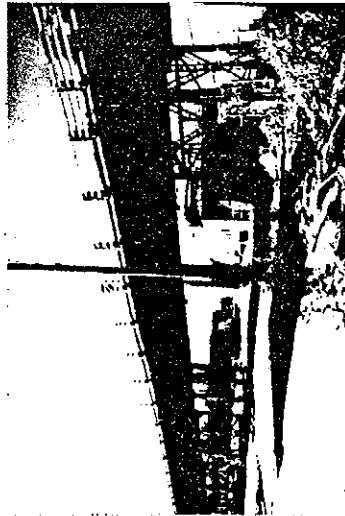
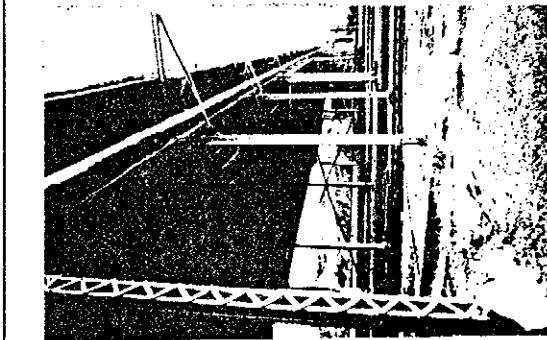
Fraserdesign Loveland Colorado

DATE  
1 March 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO.	2. NAME(S) OF STRUCTURE	3. SITE ADDRESS (STREET & NO.)	4. CITY/VICINITY	5. ORIGINAL USE	6. PRESENT USE	7. CLASSIFICATION	8. UTM ZONE	9. RATING	10. DATE
	14th Street Viaduct Bridge over South Platte River CDH: D-03-V-100	NW <sup>1/4</sup> S33, T3S, R68W	Denver	Roadway viaduct	Roadway viaduct	BT&A: BEAM: STEEL	1 3	7 5 8 4	1898
12. OWNER/ADMIN ADDRESS	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	14. CONDITION							
City of Denver	City Hall	1437 Bannock	Denver Colorado 80202	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUNS	<input type="checkbox"/> UNKNOWN
15. DANGER OF DEMOLITION? <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN									
16. SIGNIFICANCE	The first of the great iron/steel viaducts in Denver was the 23rd Street Viaduct, erected in 1887. This was followed in 1889 by the 16th Street and Larimer Street Viaducts and in 1898 by this bridge on 14th Street. Of all the multiple-span wagon/tram viaducts built in Denver in the 19th century, only the 14th Street Viaduct remains in use. With its 63 spans of steel stringers, it is the only long steel bridge in Denver and Pueblo which does not have trussed spans over the river or the railroads. The last of its type, the 14th Street Viaduct is a significant early bridge - an elevated roadway erected before the introduction of the automobile in Colorado.								



17. PHOTOS AND SKETCH MAP OF LOCATION

18 LOCATED IN AN HISTORIC DISTRICT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NAME _____	20. EXISTING SURVEYS <input type="checkbox"/> NR <input type="checkbox"/> COUNTY <input type="checkbox"/> LOCAL <input type="checkbox"/> STATE _____
19. PUBLIC ACCESSIBILITY <input type="checkbox"/> YES - LIMITED <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> NO	21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER _____
_____	19. <input type="checkbox"/> NPS <input type="checkbox"/> NHL <input type="checkbox"/> HABS <input type="checkbox"/> HAER-1 <input type="checkbox"/> HAER <input type="checkbox"/> OTHER

**Structure Inventory and Appraisal:** D-03-V-100. Colorado Department of Highways, Denver Colorado.  
Ordinances and Proceedings of City Council, Ordinance #14 (21 March 1895; Book N, pages 531-535) and Ordinance #32 (25 May 1895; Book N, pages 599-608). City and County Building, Denver Colorado.

"North Side Citizens Protest Viaduct," Denver Times, 18 December 1895.

"North Denver and West Side," Denver Republican, 26 January 1898.

"Viaduct Contracts," Rocky Mountain News, 22 April 1897.

"Denver Has \$1,500,000 Invested in Bridges and Viaducts." Denver Municipal Facts, Vol. 1, Number 41 (27 November 1909. pages 3-5, 15.

Field inspection by Clayton Fraser and Susan Cason, 29 January 1984.

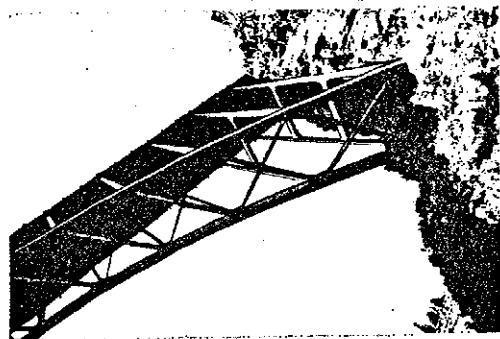
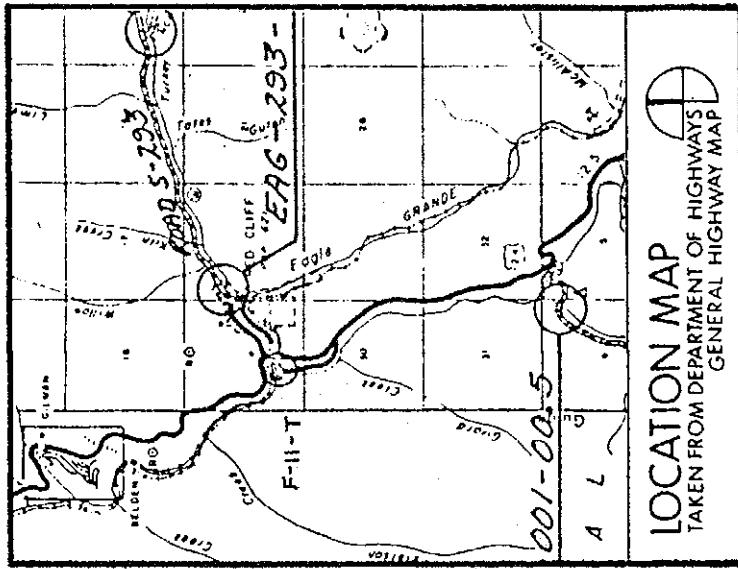
22. INVENTORIED BY Clayton Fraser and Carl Hallberg	AFFILIATION Fraserdesign Loveland Colorado	DATE 1 March 1984
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# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO										
2. NAME(S) OF STRUCTURE Red Cliff Bridge Bridge over Eagle River CDH: F-11-T	EA12		5. ORIGINAL USE highway bridge		7. CLASSIFICATION BT&A: ARCH: STEEL		9. RATING			
3. SITE ADDRESS (STREET & NO) U.S. Highway 24 over Eagle River and Denver and Rio Grande Railroad SW ½ S19, T6S, R80W			6. PRESENT USE highway bridge						10. DATE 1940	
4. CITY/VICINITY Red Cliff Vicinity	COUNTY Eagle		STATE Colorado		8. UTM ZONE 1 3		EASTING 3 8 1 6 9 0 4 3 7 3 8 5 0		11. REGION RMRO	
12. OWNER/ADMIN ADDRESS Colorado Department of Highways	4201 East Arkansas Avenue		Denver Colorado 80222		SCALE 1:24 OTHER 1:62.5		QUAD NAME Minturn			
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.										
Steel deck arch										
span number: span length: overall length: roadway width:	1 318'0" 471'0" 30'0"		flr./decking: monolithic concrete slab deck substructure: concrete spread footings and abutments guardrails : pipe rail w/ square steel balusters							
Established in 1879, the town of Cliff (later Red Cliff) was the only level spot near the silver-rich Battle Mountain mining district. Its location on the route north of Tennessee Pass placed it on one of the main routes to Leadville, and a roadway crossing of the Eagle River was put in relatively early. The Denver and Rio Grande Railroad stretched its first narrow gauge track past Red Cliff and over the pass to Leadville in 1881. In the 1920s the Colorado Department of highways erected a steel deck truss over the river and railroad, but its low siting meant that the highway had to dip down into the steep canyon. In 1939 contractor F.M. Kenney received the construction contract for a high arch over the canyon. Using steel components fabricated by the Minnesota-Moline Power Implement Company, Kenney completed the long-span arch the next year for a total cost of over \$150,000. Featuring decorative concrete obelisks at the portals, the Red Cliff Bridge has functioned unaltered to the present.										
14. CONDITION EXCELLENT	<input type="checkbox"/> GOOD		<input type="checkbox"/> FAIR		<input type="checkbox"/> DETERIORATED		<input type="checkbox"/> RUINS		15. DANGER OF DEMOLITION? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> UNKNOWN	
16. SIGNIFICANCE With the inundation of the Sapinero Arch in Gunnison County by the Blue Mesa Reservoir and the demolition of the Aspen arch, the Red Cliff is the only cantilevered steel arch remaining in Colorado. Designed by Highway Department staff engineer King Burghardt, it displays Burghardt's penchant for innovative cantilevered construction. (Burghardt also designed the only other cantilevered span in the survey: the Sevenmile Bridge in Mineral County.) Free-spanning spectacularly over the picturesque canyon, the Red Cliff Bridge is one of the most visually striking bridges in the state, and as the only example of its construction type it is a significant highway structure - one of Colorado's most outstanding bridges.										

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  
 YES, LIMITED  YES, UNLIMITED  
 UNKNOWN  
 NO

20. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  
 NR  NHL  HABS  NHL  
 COUNTY  LOCAL  OTHER  HAER-I  HAER  
 MPS  STATE

Structure Inventory and Appraisal: F-11-T. Colorado Department of Highways, Denver Colorado.

Robert Ormes. Tracking Ghost Railroads in Colorado. Colorado Springs: Century One Press, 1975.

George R. Eichler. Colorado Place Names. Boulder: Johnson Publishing Company, 1977.

"Project BRS 0149(7) Sevenmile Bridge, Southwest of Creede," cultural resource report by Colorado Department of Highways Historian Vicki Rottman, 1981.

Field inspection by Clayton Fraser and Carl Hallberg, 7 October 1983.

27. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE  
1 March 1984

## HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

THE INFLUENCE OF THE CULTURE ON THE PRACTICE OF MEDICAL ETHICS

span number:	2 (original)	1 (present)	end/top chrd:
span length:	100'0"		bottom chord:
overall length:	204'0" (orig.)	102' (present)	vertical:
overall height:	21'5"		diagonal:
clearance ht.:	13'2"		fir./decking:
roadway width:	16'0"		substructure:

Colorado Historic Bridge Survey (Page 133)  
HAER No. CO-30

HAER No. CO-30

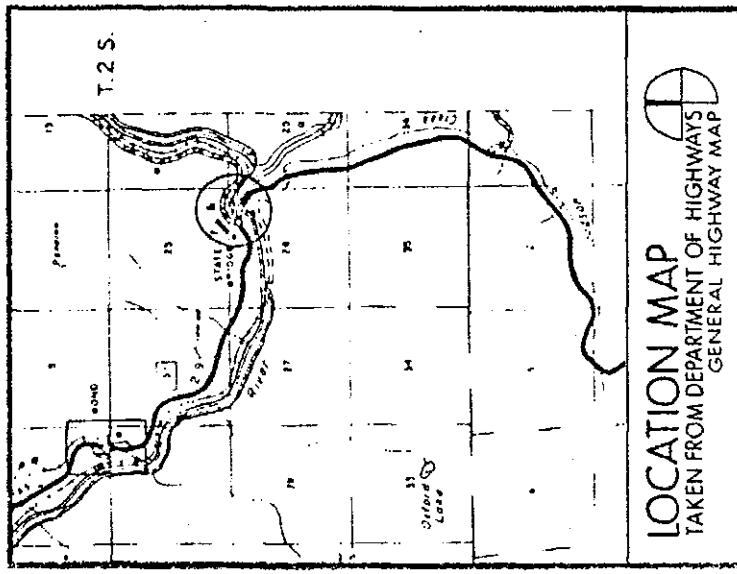
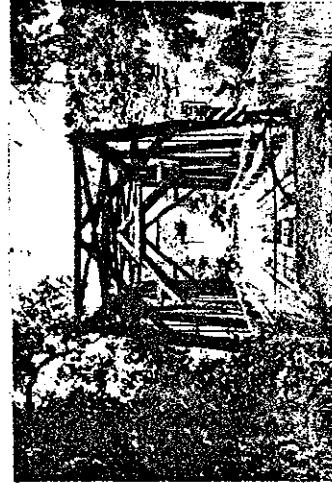
三

14. CONDITION  EXCELLENT  GOOD  FAIR  DETERIORATED  RUINS

15. DANGER OF DEMOLITION?  YES  NO  UNKNOWN

Historically, the State Bridge is significant as a pivotal span over the Grand River, important in the development of the North Park and Yampa Valley regions in northwestern Colorado as the only all-season artery from the rest of the state. Only the third bridge designed and erected for the State Engineer, it is the oldest remaining and is one of the oldest vehicular bridges in Colorado. Technologically, it is important as the last example known in the state of a once common, later archaic truss type - the Howe through truss comprised of heavy timber compression members and wrought iron tension rods. The bridge is unusual in its lateral bracing of the top chord: a three-dimensional A-frame is fastened on the mid-span panel point. Though only one of the original two spans is left, the State Bridge is one of Colorado's most significant spans.

17. PHOTOS AND SKETCH MAP OF LOCATION



# HABS/HAER INVENTORY

U.S. Department of the Interior

National Park Service  
Washington, DC 20240

1. SITE ID. NO								
2. NAME(S) OF STRUCTURE	Manitou Springs Bridges		5. ORIGINAL USE		7. CLASSIFICATION		9. RATING	
Bridges over Fountain Creek	EP07		roadway bridge		BT&A: ARCH: STONE		7 5 9 3	
COH: MANITOU CANYON	EP08						10. DATE	
Park Avenue and Canon Avenue over Fountain Creek			6. PRESENT USE				1906	
			roadway bridge				1907	
3. SITE ADDRESS (STREET & NO)							11. REGION	
Manitou Springs	CITY/VICINITY		COUNTY		8. UTM ZONE		NORTHING	
	El Paso		Colorado		1 3		QUAD NAME	
					5 0 7 2 8 5 4 3 0 0 8 7 0		RMRO	
12. OWNER/ADMIN ADDRESS					SCALE			
City of Manitou Springs					1:24			
					1:62.5			
					OTHER			
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.								
Semicircular, stone ashlar filled arch								

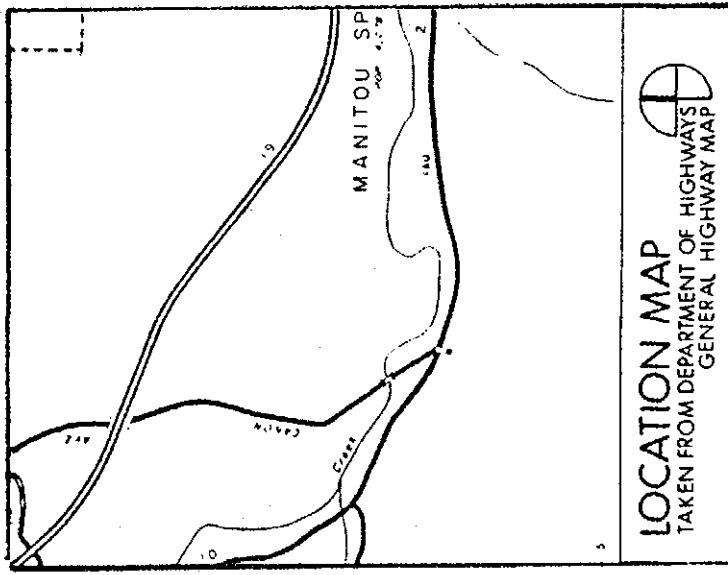
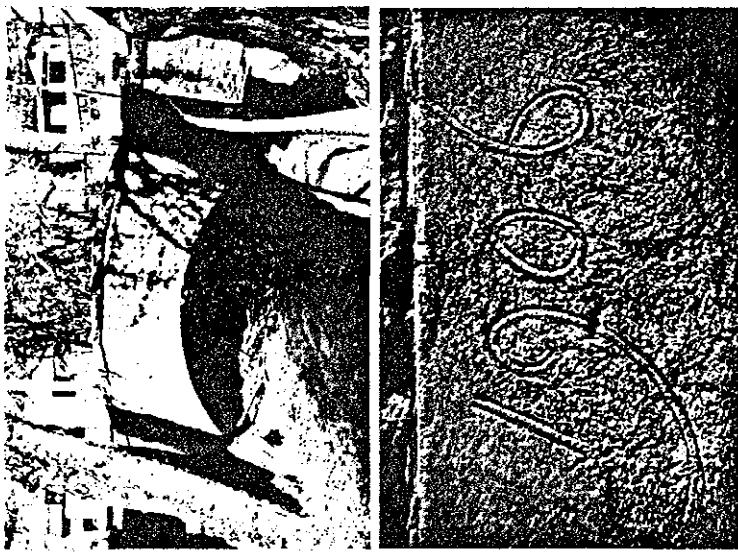
span number: 1  
 span length: 18' 6" (EP07); 21' 5" (EP08)  
 overall length: 35' 0" (EP07); 39' 4" (EP08)  
 roadway width : 36' 9" (EP07); 28' 9" (EP08)  
 flr./decking: asphalt over earth fill  
 substructure: concrete foundations w/ solid stone retaining  
 guardrails : solid stone parapet w/ corbelled stone coping

Early in 1906 the Manitou Springs City Council considered construction of a new bridge to replace the existing timber span over Fountain Creek on Canon Avenue. The responsibility for contracting was delegated to the mayor, who, it is assumed, hired local masons to build the stone bridge. The following year, an almost identical stone arch was built on Park Avenue over the same creek. Both bridges feature semicircular arches with cambered roadways, coursed ashlar stonework, tapered voussoirs, corbelled stone copings and decorative recessed benches at mid-span on each side. With wide roadway widths flanked by concrete sidewalks, both bridges remain in use, architecturally and structurally intact.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUNS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN
16. SIGNIFICANCE								

With a construction date of 1906 and a span length of 21' 5", the Canon Avenue Bridge is the oldest and longest-span rubble arch in the survey. Both bridges are additionally notable as the only rubble vehicular arches built by labor other than the Works Projects Administration. Decoratively configured and well-crafted, they are excellent examples of rubble arch construction.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES-LIMITED  YES-UNLIMITED  NO  UNKNOWN

20. EXISTING SURVEYS  NR  NHL  HABS  HAER  STATE  COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: MANITOU-CANON. Colorado Department of Highways, Denver Colorado.

Manitou Springs City Council Minutes: 9 April 1906 (Book V, page 189), 16 April 1907 (Book V, page 226). Manitou Springs City Hall, Manitou Springs Colorado.

Field inspection by Clayton Fraser and Susan Cason, 2 February 1984.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraser Design Loveland Colorado DATE  
15 February 1984

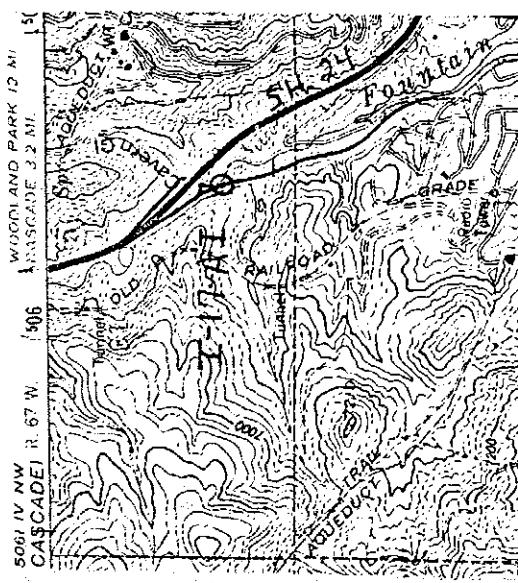
# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO	Bridge over Fountain Creek COH: I-17-A1		5. ORIGINAL USE roadway bridge	6. PRESENT USE roadway bridge	7. CLASSIFICATION BT&A: ARCH: REINFORCED CONCRETE	8. UTM ZONE 1 3	EASTING 5 0 6	NORTHING 5 0 0 4	10. DATE 1932	9. RATING
2. NAME(S) OF STRUCTURE	Business Route 24 over Fountain Creek 1/2 mile north of Manitou Springs. NE $\frac{1}{4}$ , S07, T135, R066W		4. CITY/VICINITY Manitou Springs	COUNTY El Paso	STATE Colorado	SCALE 1:24,000	OTHER 1:62,5	QUAD NAME MANITOU SPRINGS	11. REGION RMRO	
3. SITE ADDRESS (STREET & NO)	Colorado Department of Highways		12. OWNER/ADMIN ADDRESS Colorado Department of Highways	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	4201 East Arkansas Avenue Denver Colorado 80222					
Two-ribbed, reinforced concrete open spandrel deck arch										
span number: span length: overall length: roadway width:	4 162' 210' 36'	flr./decking: substructure: guardrails:	asphalt solid concrete piers with concrete wingwalls poured-in-place concrete doghouse guardrails							
<p>A portion of Colorado State Highway 24 essentially follows the route of the old Ute Trail, an Indian Trail which extended from South Park through Manitou Springs to the plains. When the Pikes Peak Gold Rush occurred in 1859, prospectors followed this trail into the mountains. As early as 1860, improvements were made converting the trail into a wagon road. Between 1916 and 1928, the route was upgraded to serve as an automobile highway, becoming a link in the "Coast-to-Coast" highway network. It was again rebuilt during the 1930's with federal aid funds. At that time, a new concrete arch bridge was constructed over Fountain Creek about <math>\frac{1}{2}</math> mile north of Manitou Springs. The 1932 bridge contract was awarded to the Pueblo Bridge &amp; Construction Company at a cost of \$44,695. King Burghardt, one of the Highway Department's most innovative bridge engineers, designed the 160-foot span concrete open spandrel arch which featured attractive rubble masonry retaining walls and lampposts at the approaches (the lampposts have been removed). Structure is now located on BR 24.</p>										
14. CONDITION	<input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> GOOD <input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED <input type="checkbox"/> RUINS	<input type="checkbox"/> DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> UNKNOWN						
15. SIGNIFICANCE	Historically, this was a regionally important crossing on the auto route built along the old Ute Trail. Technologically, this bridge is significant as the longest example in the survey of a relatively little used bridge type in the Rocky Mountains - the open spandrel concrete arch. It is also notable for its association with the eminent bridge designer, King Burghardt, and the Pueblo Bridge Company, Colorado's most prolific bridge contractor (this is reputed to be the last bridge built by this firm). Set in rugged Fountain Canyon adjacent to Rainbow Falls, its graceful design is all the more striking.									

17. PHOTOS AND SKETCH MAP OF LOCATION

Manitou Springs Quadrangle  
Scale-1:24,000



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  YES, LIMITED  UNKNOWN  NO

20. EXISTING SURVEYS  NR  NPS  COUNTY  LOCAL  HABS  HAER  OTHER  HABS-1  HAER-1  NPS  STATE

21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Bridgeplate: Colorado State Highway Department, Fountain Creek, Built by Pueblo Bridge Construction Co., 1932.

Field Inspection by Rebecca Herbst, 28 June 1984.

Freed, Elaine and Barber, David. "Historic Sites in El Paso County, Colorado." Prepared for the El Paso County Land Use Development (1976-77).

McConnell, Virginia. Ute Pass: Route of the Blue Sky People. Denver: Sage Books, 1963.

Points of Interest. Denver: State Historical Society of Colorado, 1972.

Structure Inventory and Appraisal: I-17-A1, Colorado Department of Highways, Denver, Colorado

22. ENFORCED BY  Colorado Dept. of Highways July, 1984  
 Rebecca Herbst

# HABS/HAER INVENTORY



1. SITE I.O. NO.

2. NAME(S) OF STRUCTURE

**Fourth Street Bridge**  
Bridge over Arkansas River  
CDH: CC 2-FOURTH ST.

3. SITE ADDRESS (STREET & NO.)

**Fourth Street over Arkansas River**  
SE $\frac{1}{4}$  S32, T18S, R70W

4. CITY/VICINITY

**Canon City**  
Fremont

5. OWNER/ADMIN ADDRESS

**City of Canon City**  
City Hall 612 Royal Gorge Boulevard  
Canon City Colorado 81212

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

**Pin-connected, 6-panel steel Pratt through truss**

span number: 1  
span length: 105'6"  
overall length: 109'0"  
overall height: 20'2"  
clerance hgt.: 14'3"  
roadway width : 26'0"

span number: 1  
span length: 105'6"  
overall length: 109'0"  
overall height: 20'2"  
clerance hgt.: 14'3"  
roadway width : 26'0"

end/top chrd: 2 built-up channels w/ double lacing on top and bottom  
bottom chord: 2 rectangular eyebars  
vertical: 2 channels w/ lacing  
diagonal: 2 rectangular eyebars; 1 round eyebar w/ turnbuckle  
flr./decking: asphalt over corrugated steel decking w/ steel stringers  
substrue: stone wingwalls w/ concrete vertical extension on north

Colorado Historic Bridge Survey (Page 139)  
HAER No. CO-30

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

2. NAME(S) OF STRUCTURE	FR01	5. ORIGINAL USE	7. CLASSIFICATION			9. RATING
<b>Fourth Street Bridge</b>		roadway bridge	<b>BT&amp;A: TRUSS: STEEL</b>			7 6 0 3
Bridge over Arkansas River		6. PRESENT USE				10. DATE
CDH: CC 2-FOURTH ST.		roadway bridge (abandoned)				1891
			8. UTM ZONE	EASTING	NORTHING	
			1 3	4 7 9 8 4 0	4 2 5 4 0 0	RMRO
			SCALE	1:24	1:62.5	QUAD NAME
			OTHER			Canon City

4. CITY/VICINITY	STATE	5. ORIGINAL USE	7. CLASSIFICATION			9. RATING
<b>Canon City</b>	Colorado	roadway bridge	<b>BT&amp;A: TRUSS: STEEL</b>			7 6 0 3
Fremont		6. PRESENT USE				10. DATE
		roadway bridge (abandoned)				1891
			8. UTM ZONE	EASTING	NORTHING	
			1 3	4 7 9 8 4 0	4 2 5 4 0 0	RMRO
			SCALE	1:24	1:62.5	QUAD NAME
			OTHER			Canon City

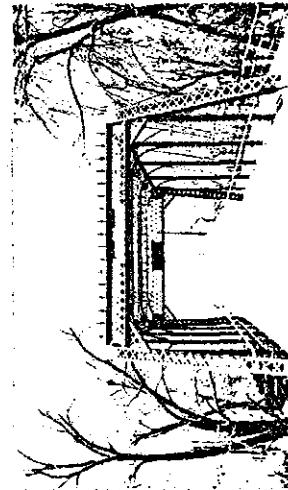
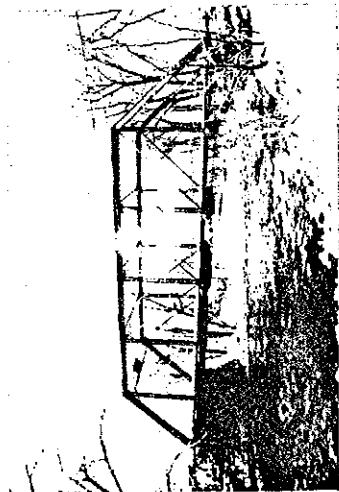
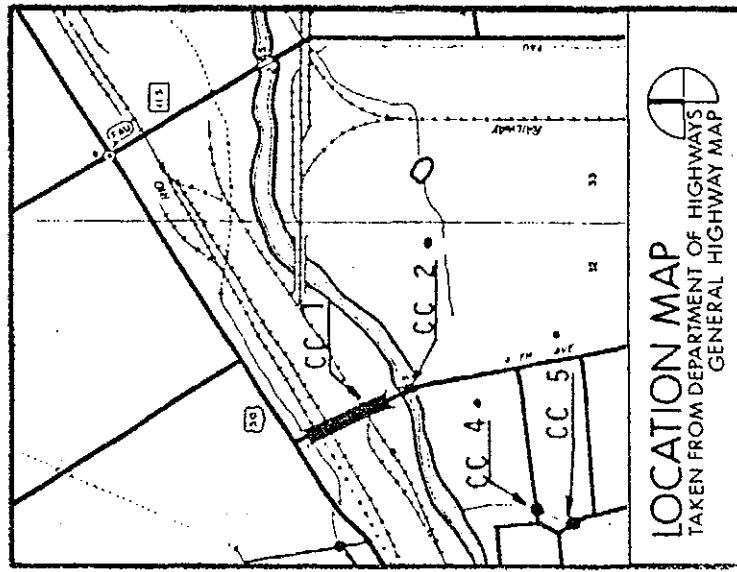
14. CONDITION  EXCELLENT  GOOD  FAIR  DETERIORATED  RUINS

15. DANGER OF DEMOLITION?  YES  NO  UNKNOWN

16. SIGNIFICANCE

A locally important crossing for decades, the Fourth Street Bridge is the oldest roadway span over the Arkansas River in Colorado. As a Pratt through truss it is exceeded in age in the survey by only one bridge (DE01), and as a truss erected by the Bullen Bridge Company it is exceeded in age by one other (DL07). The bridge features several unusual elements: laced portal bracing, tapered built-up floor beams with cantilevered sidewalks, atypically laced struts and decorative portal cresting and pierced steel builder's plate. As one of the oldest bridges in the state, built early in the career of the state's most important early bridge contractors, the Fourth Street Bridge is a significant well-preserved example of early steel truss construction.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN	
20. EXISTING SURVEY NR _____ COUNTY _____			
<input type="checkbox"/> NHL <input type="checkbox"/> HABS <input type="checkbox"/> HAER-1 <input type="checkbox"/> HAER <input type="checkbox"/> OTHER <input type="checkbox"/> NPS <input type="checkbox"/> STATE			

21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: CC 2-FFDURTH ST. Colorado Department of Highways, Denver Colorado.  
Fremont County Commissioners' Minutes: 5 October 1890 (Book 5, page 413), 19 November 1890 (Book 5, page 415), 2 December 1890 (Book 5, pages 417-18), 13 December 1890 (Book 5, page 419), 31 December 1890 (Book 5, page 420), 23 March 1891 (Book 6, page 48), 25 June 1891 (Book 6, page 50). Fremont County Courthouse, Canon City Colorado.  
Pierced steel builder's plate on portal of bridge: "Built by the Builen Bridge Co. 1891".  
Field inspection by Clayton Fraser, 15 December 1983.

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240


1. SITE I.D. NO

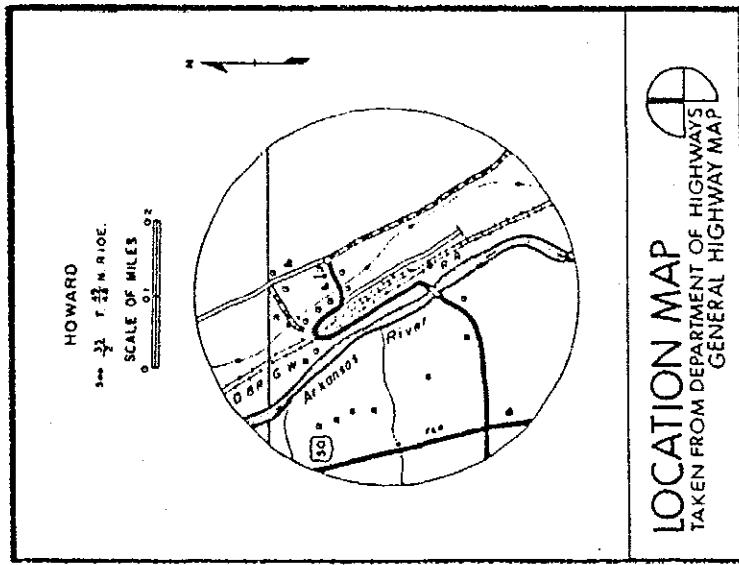
2. NAME(S) OF STRUCTURE <b>Howard Bridge</b> Bridge over Arkansas River CDH: FRCO 301-HOWARD	FR22	5. ORIGINAL USE roadway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL	9. RATING 7 6 0 3
3. SITE ADDRESS (STREET & NO) County Road over Arkansas River NW $\frac{1}{4}$ S2, T48N, R10E		6. PRESENT USE roadway bridge		10. DATE 1924
4. CITY/VICINITY <b>Howard</b>	COUNTY <b>Fremont</b>	STATE <b>Colorado</b>	8. UTM ZONE 1 3 4 2 7 1 6 0 4 2 5 5 4 7 5 SCALE 1:24 1:62.5 OTHER	11. REGION RMRO NAME <b>Howard</b>
12. OWNER/ADMIN ADDRESS <b>Fremont County</b>	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND DISCREPANCIES, ARCHITECTS, ENGINEERS, ETC.	<b>Fremont County Courthouse</b> Sixth and Macon Canon City Colorado 81212		

14. CONDITION <input checked="" type="checkbox"/> EXCELLENT <input type="checkbox"/> GOOD <input type="checkbox"/> FAIR	15. DANGER OF DEMOLITION? <input type="checkbox"/> RUINS <input type="checkbox"/> DETERIORATED	16. SIGNIFICANCE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> UNKNOWN
17. COMMENTS		
<p>Rigid-connected, 12-panel steel Warren pony truss with alternating verticals and polygonal top chord</p> <p>span number: 1</p> <p>span length: 102' 0"</p> <p>overall length: 104' 0"</p> <p>roadway width : 15' 6"</p> <p>end/top chrd: 2 channels w/ cover plate and lacing</p> <p>bottom chord: 2 angles w/ batten plates</p> <p>vertical: 1 channel</p> <p>diagonal: 2 angles w/ batten plates</p> <p>fir./decking: asphalt over corrugated steel deck w/ steel stringers</p> <p>substructure: concrete/stone wingwalls</p>		

Colorado Historic Bridge Survey (Page 141)  
HAER No. CO-30

After the advertisement by the Fremont County Board of Commissioners, two bridge contractors - the Monarch Engineering Company and the Bullen Bridge Company - submitted competitive bids for erection of five steel trusses at crossings in the county. The bids were first laid over, then rejected in March 1924. Later that month the commissioners contracted with a third firm - the Minneapolis Steel and Machinery Company - for the spans: three 60' trusses over Current Creek, Oil Creek and Newlin Creek, a 50' bridge across Bumbach Gulch and this 102' pony truss across the Arkansas River at Howard. The Howard Bridge was a replacement span, built on the abutments of the previous bridge. It remains in that location, with sub- and superstructure unaltered.

The Minneapolis-Moline Power Implement Company and the Minnesota Steel and Machinery Company were by far the most prolific builders of Colorado's vehicular trusses in the 1920s and 1930s. Component fabricators primarily, they typically relied upon locally based contractors for erection and seldom actually built the bridges using company crews. The Howard Bridge is the only bridge in the survey directly attributable to the latter firm. It is the only dateable example of the three in the survey of this striking Warren subtype. One of several medium-span trusses along this stretch of the Arkansas River, it is a locally important crossing with marginal historical significance.



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEYS			
	<input type="checkbox"/> NR	<input type="checkbox"/> NHL	<input type="checkbox"/> HABS
	<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL	<input type="checkbox"/> HAER
			<input type="checkbox"/> OTHER
21 REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			

**Structure Inventory and Appraisal:** FRCO 301-HOWARD. Colorado Department of Highways, Denver Colorado.

Fremont County Commissioners' Minutes: 3 March 1924 (Book 13, page 419); 8 March 1924 (Book 13, page 421), 31 March 1924 (Book 13, page 422). Fremont County Courthouse, Canon City Colorado.

Roy Canterbury, Fremont County District 3 Commissioner. Oral interview with Clayton Fraser, 10 January 1984. Field inspection by Clayton Fraser, 16 December 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign

DATE  
12 January 1984  
Loveland Colorado

# HABS/HAER INVENTORY

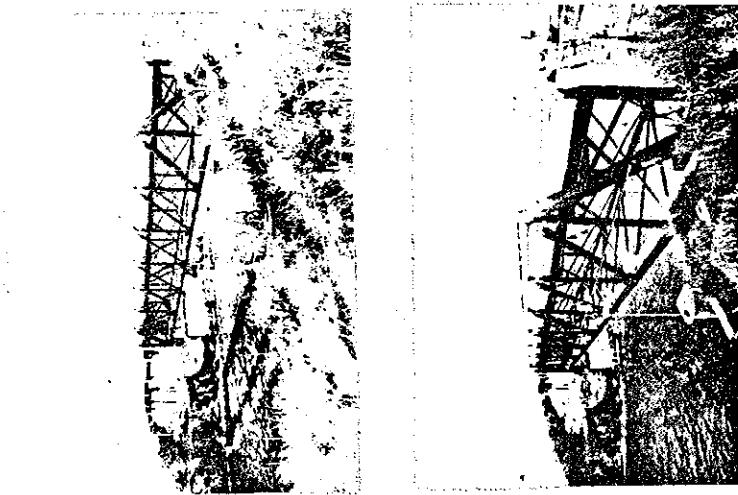
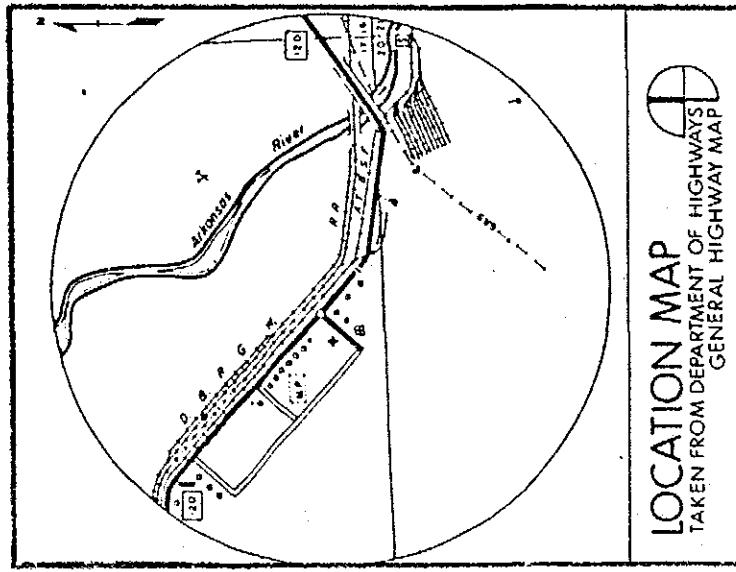
U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO			
2. NAMES OF STRUCTURE	FR52	5. ORIGINAL USE	7. CLASSIFICATION
Portland Bridge		highway bridge	BT&A: TRUSS: STEEL
Bridge over Arkansas River			
CDH: K-16-K			
3. SITE ADDRESS (STREET & NO.)	State Highway 120 over Arkansas River and Denver and Rio Grande Western Railroad SE $\frac{1}{4}$ S17, T19S, R6GW		
4. CITY/VICINITY	Fremont	STATE	SCALE
12. OWNER/ADMIN ADDRESS	Colorado		
Colorado Department of Highways	4201 East Arkansas Avenue	Denver	1:24
		Colorado	162.5
		OTHER	
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	<p>Rigid-connected, 8-panel steel Pratt semi-deck truss</p> <p>span number: 1</p> <p>span length: 150'0"</p> <p>overall length: 388'0"</p> <p>roadway width : 20'0"</p> <p>end/top chrd: 2 built-up channels w/ cover plate and lacing</p> <p>bottom chord: 4 angles w/ batten plates</p> <p>vertical: 4 angles w/ continuous plates</p> <p>diagonal: 4 angles w/ batten plates</p> <p>ftr./decking: monolithic concrete deck. w/ rolled steel stringers</p> <p>substructure: concrete wingwalls w/ concrete spill-through piers</p>		

By 1926 the first state-funded bridge at Portland - a 125'-span filled-spandrel arch built in 1907 by the Colorado Portland Cement Company - had begun to strain under the traffic on the highway between Florence and Pueblo. During that year the Department of Highways contracted with bridgebuilder H.M. Fox of Florence, Colorado, to erect a new viaduct over the Arkansas River and Denver and Denver and Rio Grande Railroad tracks to replace the existing bridge. The new bridge consisted of a long-span steel semi-deck truss connected to a 6-span concrete girder on the east approach. Using steel components rolled by the Illinois Steel Company and fabricated by the Minnesota-Moline Power Implement Company, Fox completed the viaduct by November 1907. It has remained in place since in unaltered condition.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN
16. SIGNIFICANCE	The Portland Bridge represents an unusual structural configuration: the semi-deck steel truss, which features floor beams joined to the verticals and not to the upper or lower chords. Though not the only semi-deck roadway truss erected in the state (the Wilmot Ranch Bridge over the Colorado River was built by the Pueblo Bridge Company for the State Engineer in 1911 and was torn down in 1983), it is the only one remaining in public use. As such it is a unique example in Colorado of an uncommon subtype of the Pratt vehicular truss.							

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN

20. EXISTING SURVEYS  NR  NHL  HAER-1  HABS  HAER  NPS  
 COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS AND/OR OTHER  
NO

**Structure Inventory and Appraisal:** K-16-K. Colorado Department of Highways, Denver Colorado.

Fremont County Commissioners' Minutes: 7 November 1927 (Book 14, page 119). Fremont County Courthouse, Canon City Colorado.

Dedication plate on bridge: "Colorado State Highway Department Viaduct over D.&R.G.W.R.R. & Arkansas River Built by H.M. Fox, Florence Colo. 1926".

Field inspection by Clayton Fraser, 15 December 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign Loveland Colorado

DATE  
15 January 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



1. SITE NO.

2. NAME(S) OF STRUCTURE Bridge No. 10; Adelaide Bridge Bridge over Eightmile Creek		FR48	5. ORIGINAL USE railroad bridge	7. CLASSIFICATION BT&A: BEAM: STEEL		7	5	8	4	9. RATING
3. SITE ADDRESS (STREET & NO.) Fremont County Road over Eightmile Creek 11.5 miles north of Florence SW <sup>1/4</sup> S14, T17S, R69W			6. PRESENT USE roadway bridge							10. DATE 1894
4. CITY/VICINITY Florence vicinity		Fremont County	STATE Colorado	8. UTM ZONE 1	EASTING 1 3	9. NORTHING 4 9 2 5 0 0	10. QUAD NAME Phantom Canyon	11. REGION RMRO		
12. OWNER/ADMIN ADDRESS Fremont County Courthouse		Sixth and Macon	SCALE 1:24	13. CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	1:62,500	OTHER				

Multiple-span trestle with built-up steel deck girder

span number:

3

span length:

69'0"

overall length:

210'0"

roadway width :

13'2"

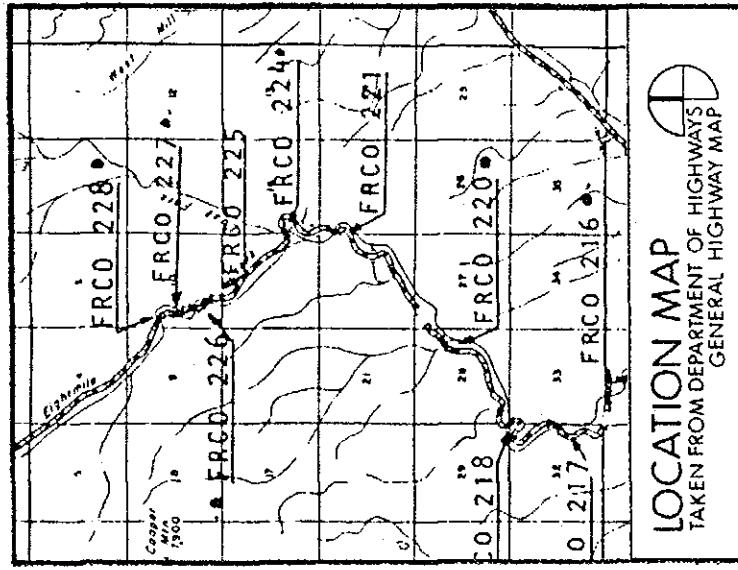
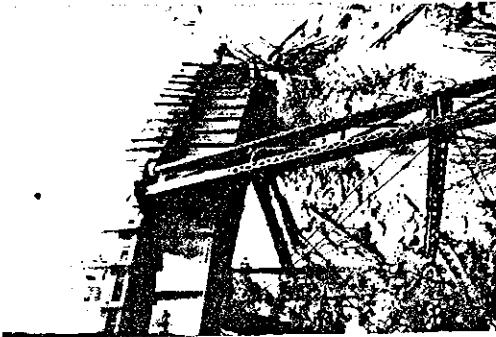
flr./decking: timber decking  
main girders: 2 steel built-up plate girders, 6'2" deep  
web stiffner: steel angle at 4'6" O.C.  
substructure: stone spread footings and retaining abutments

In 1893 and early 1894 the Florence and Cripple Creek Railroad hurried to be the first to extend a narrow gauge line into the fabulously wealthy Cripple Creek gold district. The chief engineer was R.W. Stewart of Florence and construction of the line was contracted to prominent Pueblo-based railroad builders Orman and Crook. The track followed the one proposed the year before by the Florence Cripple Creek and State Line up Eightmile Creek in Phantom Canon. Construction through the narrow canyon involved 10 timber and 7 combination bridges, 142 trestles and one steel bridge - this three-span trestle near the Adelaide Station, completed in April 1894. Although virtually all of the other spans were washed out at one time or other and another steel bridge was eventually put up at the Wilbur Loop, the Adelaide Bridge was the only original span to remain in place. Featuring two laced steel towers, it was converted to roadway use when the grade was taken over by Fremont County after closure of the railroad in 1912.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN
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16. SIGNIFICANCE

Bridge No. 10 is significant as a well-preserved and structurally unchanged railroad trestle typical of the type erected in the Rocky Mountains during the mineral rushes of the late 19th century. Although exceeded in length and age by the Maroon Creek Bridge (P107) along the Colorado Midland Railroad, it is still a notable structure - the most outstanding and the last remaining of the bridges along the scenic Florence and Cripple Creek Railroad.



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NAME	19. PUBLIC ACCESSIBILITY <input type="checkbox"/> YES, LIMITED <input checked="" type="checkbox"/> YES, UNLIMITED <input type="checkbox"/> UNKNOWN <input type="checkbox"/> NO	20. EXISTING SURVEYS <input type="checkbox"/> NLR <input type="checkbox"/> NHL <input type="checkbox"/> HABS <input type="checkbox"/> NHL COUNTY <input type="checkbox"/> LOCAL <input type="checkbox"/> OTHER <input type="checkbox"/> HAER-1 <input type="checkbox"/> HAER <input type="checkbox"/> NPS <input type="checkbox"/> STATE
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21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: FRCO 10-224. Colorado Department of Highways, Denver Colorado.  
W.P. Hardesty. "The Railways of the Cripple Creek, Colo., Mining District," Engineering News, Vol. XL, Number 10 (8 September 1898). pages 156-57.

"At Robinson." Florence Oil Refiner, 11 April 1894. page 1.  
Tivis Wilkins. Florence and Cripple Creek Railroad: Colorado Rail Annual 13, Denver: Colorado Railroad Museum, 1976.  
Tivis Wilkins. Oral interview with Clayton Fraser, 14 January 1984.  
Robert Ormes. Tracking Ghost Railroads in Colorado, Colorado Springs: Century One Press, 1975 (revised 1980).  
Field inspection by Clayton Fraser, 16 December 1983.

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



1. SITE I.O. NO

2. NAME(S) OF STRUCTURE <b>Royal Gorge Bridge</b> Bridge over Arkansas River		FR58	5. ORIGINAL USE Roadway bridge	7. CLASSIFICATION BT&A: SUSP: STEEL		9. RATING 7 6 1 0
3. SITE ADDRESS (STREET & NO.) <b>Royal Gorge Park over Arkansas River</b> SW½ S22, T18S, R71W			6. PRESENT USE Roadway bridge			10. DATE 1929
4. CITY/VICINITY <b>Canon City Vicinity</b>		COUNTY Fremont	STATE Colorado	8. UTM ZONE 1	EASTING 3	NORTHING 0
12. OWNER/ADMIN ADDRESS <b>City Hall</b>		13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND ARCHITECTS, ENGINEERS, ETC. <b>Steel Suspension bridge</b>	SCALE 1:24	SCALE 1:62.5	QUAD NAME OTHER	11. REGION RMRO

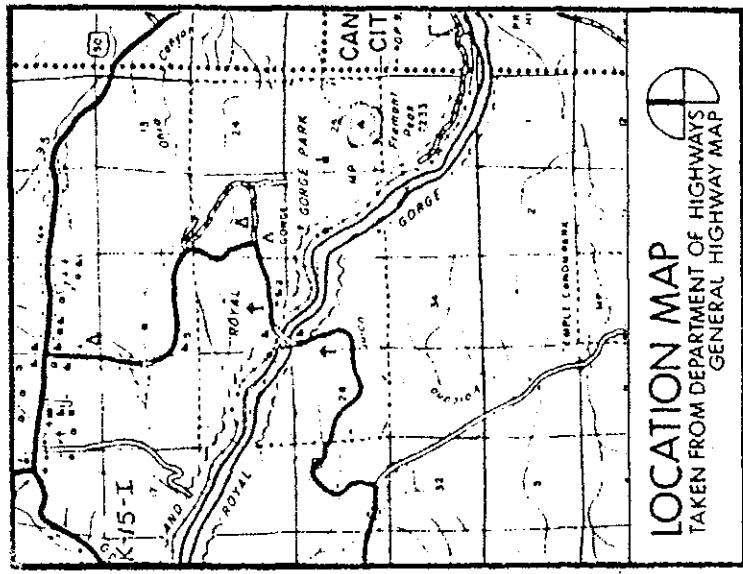
14. CONDITION  
 EXCELLENT  
 GOOD  
 FAIR

15. DETERIORATED  
 DETERIORATED  
 RUINS

16. DANGER OF DEMOLITION? (SPECIFY THREAT)  
 YES  
 NO  
 UNKNOWN

16. SIGNIFICANCE

The Royal Gorge Bridge is a fluke, which for several reasons is unique in Colorado. The only bridge in the state for which the primary purpose is recreation rather than transportation, it is easily Colorado's most famous span - the only bridge in the state on which a toll is exacted. Though not the only vehicular suspension bridge erected in Colorado (a 260' suspension bridge was built at Ignacio by La Plata County in 1912), it is the only one remaining. With a main span of 880' and a height of 1053' above the river, it was at the time of its completion claimed to be the longest-span bridge west of the Mississippi and is still reported to be the highest suspension bridge above water level. The bridge is unusual in that stiffening roadway trusses have been eschewed in favor of tension cables beneath the deck for lateral bracing. Colorado's most technologically significant bridge, it was listed on NRHP in September 1983.



17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	NAME <input type="checkbox"/> Royal Gorge Bridge and Inclined Railway
19. PUBLIC ACCESSIBILITY <input checked="" type="checkbox"/> YES, LIMITED <input type="checkbox"/> YES, UNLIMITED <input type="checkbox"/> UNKNOWN	20. EXISTING SURVEY <input checked="" type="checkbox"/> NR <input type="checkbox"/> HABS <input type="checkbox"/> HAER-1 <input type="checkbox"/> HAER <input type="checkbox"/> OTHER
21. REFERENCES—HISTORICAL CONTACTS, AND/OR OTHER	

- "Flying Span Bridges Royal Gorge," Colorado Highways, Vol 9, Number 1 (January 1930), pages 22-23.  
George Cole. "New Suspension Bridge Spans Royal Gorge in Colorado," Engineering News-Record, 5 June 1930, pages 922-24.

Walter Jenks. "Royal Gorge Bridge and Incline Railway," NRHP Nomination, 4 February 1983.  
Fremont County Commissioners' Minutes: 3 April 1929 (Book 14, page 213). Fremont County Courthouse, Canon City Colorado.  
Field inspection by Clayton Fraser, 16 December 1983.

22. INVENTORIED BY Clayton Fraser and Carl Hallberg	AFFILIATION Fraserdesign	Loveland Colorado	DATE 18 January 1984
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# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240


1. SITE I.D. NO

2. NAME(S) OF STRUCTURE <b>Satank Bridge</b> Bridge over Roaring Fork River		5. ORIGINAL USE roadway bridge		7. CLASSIFICATION BT&A: TRUSS: WOOD		9. RATING 7 6 0 0	
3. SITE ADDRESS (STREET & NO) County Road 106 over Roaring Fork River 1.4 miles northwest of Carbondale SW $\frac{1}{4}$ S28 T7S R88W		6. PRESENT USE Roadway bridge				10. DATE 1900	
4. CITY/VICINITY Carbondale vicinity		7. UTM ZONE 1 13		8. EASTING 3 0 8 0 2 0 4 3 6 5 2 3 0		11. REGION RMRO	
Garfield County		STATE Colorado		SCALE 1:24		12. QUAD NAME Carbondale	
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.		Glenwood Springs Colorado					

Pin-connected, 6-panel timber Pratt through truss

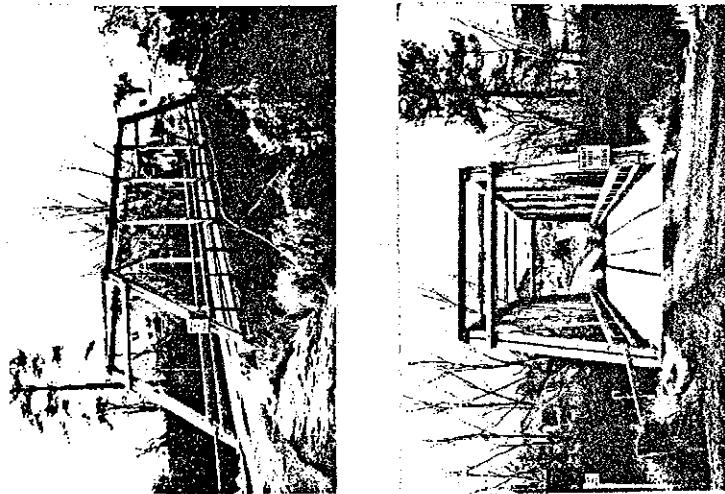
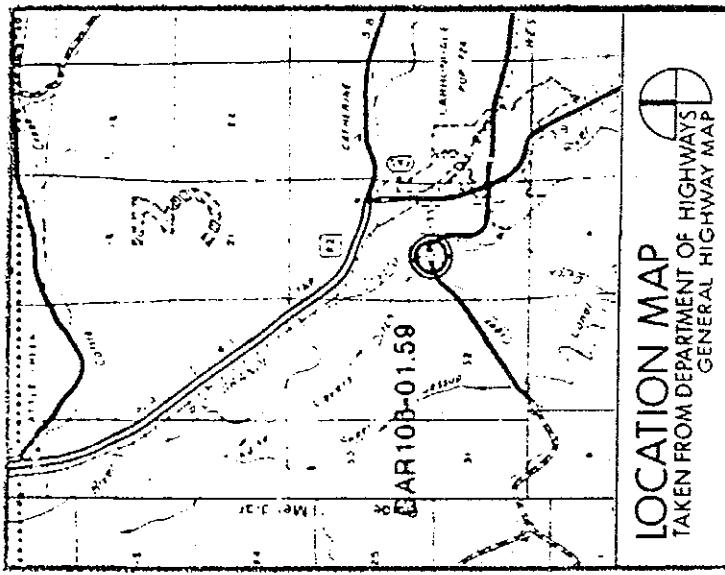
span number: 1  
span length: 100' 0"  
overall length: 102' 0"  
overall height: 17' 0"  
clearance hgt.: 12' 10"  
roadway width : 13' 7"

end/top chrd: 2 8x10 w/ spacers (end); 3 4 $\frac{1}{2}$ x10 w/ spacers (top)  
bottom chord: 2 rectangular eyebars  
vertical: 2 rectangular eyebars  
diagonal: 2 rectangular eyebars  
flr./decking: timber decking and stringers w/ 2 6x12 floor beam  
substructure: stone retaining walls w/ concrete caps

Colorado Historic Bridge Survey (Page 149)  
HAER No. CO-30

14. CONDITION  EXCELLENT  GOOD  FAIR  DETERIORATED  RUINS
15. DANGER OF DEMOLITION?  YES  NO  UNKNOWN
16. SIGNIFICANCE  
Around the turn of the century, after a series of well-publicized collapses and the replacement of iron with comparatively inexpensive steel, the Howe truss declined in use as a vehicular bridge type. Although some were built as late as the 1930s, the Howe as a generic form was generally replaced by the inherently stronger Pratt truss. The Satank Bridge is interesting as a direct exemplification of that engineering trend. It is one of the older roadway trusses in Colorado, and with the demolition of the Virginia Dale Bridge (LR15), it is the only remaining timber Pratt through truss in public use in the state. Additionally, the Satank Bridge is the longest-span timber truss in the survey. As such it is a significant remnant among Colorado's bridges.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEY			
	<input type="checkbox"/> N.R.	<input type="checkbox"/> N.H.L.	<input type="checkbox"/> H.A.S.S.
	<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL	<input type="checkbox"/> OTHER
21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			

Garfield County Commissioners' Minutes: 10 February 1900 (Book C, page 96), 5 March 1900 (Book C, pages 99-100), 2 April 1900 (Book C, page 104), 7 May 1900 (Book C, pages 110-111), 12 May 1900 (Book C, page 117). Garfield County Courthouse, Glenwood Springs Colorado.

Field inspection by Clayton Fraser and Susan Cason. 16 November 1983.

Correspondence from Rebecca Herbst, Historian, Colorado Department of Highways. 24 October 1983.

22. INVENTORIED BY	Clayton Fraser and Susan Cason	AFFILIATION	Fraserdesign
		DATE	21 November 1983

# HABS/HAER INVENTORY

- U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

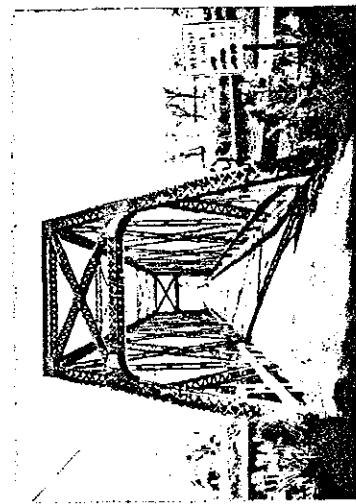
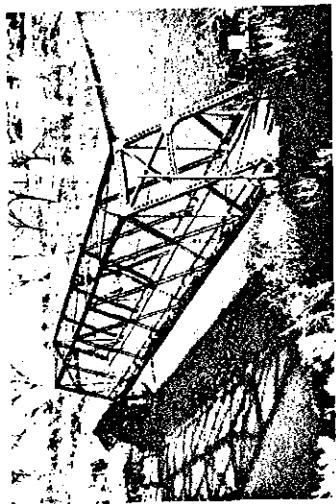
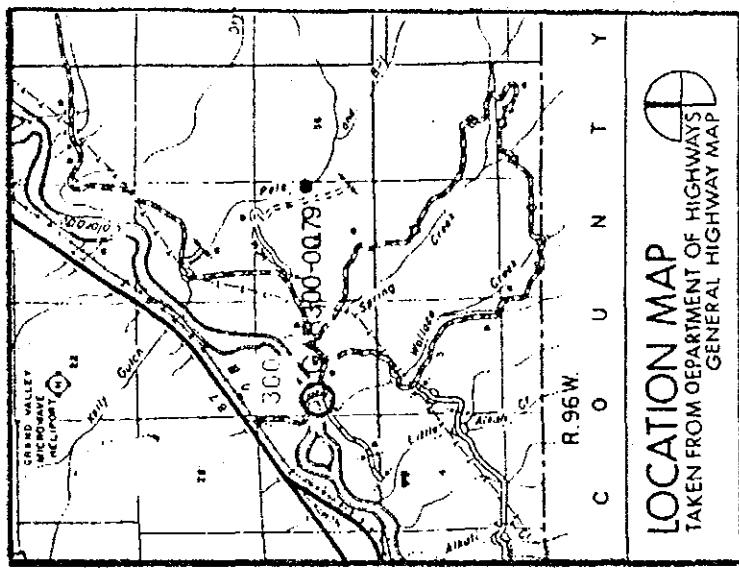
1. SITE I.D. NO.										
2. NAMES OF STRUCTURE										
Una Bridge Bridge over Colorado River CDH: GAR300-00.7g	GA02	5. ORIGINAL USE Roadway bridge	6. PRESENT USE Roadway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL	8. UTM ZONE 1	9. EASTING 2	10. DATE 1910	11. REGION RMRO		
3. SITE ADDRESS (STREET & NO.) County Road 300 over Colorado River 5.1 miles southwest of Parachute NW <sup>1/4</sup> S34, T7S, R96W		COUNTY Garfield	STATE Colorado	SCALE 1:24 OTHER 1:62.5	NORTHING 7	7	4	Grand Valley		
4. CITY/VICINITY Parachute vicinity	12. OWNER/ADMIN ADDRESS Garfield County	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC. Rigid-connected, 7-panel steel Double-intersected Warren through truss with subdivided panels	14. CONDITION <input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> GOOD <input type="checkbox"/> FAIR	15. DANGER OF DEMOLITION? (SPECIFY THREAT) <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN						

The twin bridges at the Una and Lacy sidings of the D&RGW RR were jointly funded in 1909 by the State Legislature and the Garfield County Board of Commissioners. Featuring virtually identical designs by the State Engineer, with long-spar through trusses with deck girder approaches, they were advertised for bid in May 1910. The construction contract was awarded to Charles G. Sheely of Denver later that month: \$24,000 for Una, \$23,750 for Lacy. Using steel components fabricated by the Minneapolis Steel and Machinery Company, Sheely completed both spans at the end of the year. High water in the following spring heavily scoured the center piers of the two bridges. By mid-May the bridge at Una had settled dramatically, making it unsafe for travel; the Lacy Bridge collapsed completely and stayed in litigation for years after. The pier was reconstructed for the Una Bridge, and the big truss has stood in place unaltered since.

16. SIGNIFICANCE

Among Colorado's counties, Garfield benefitted most from state-funded bridge construction before formation of the Highway Department. State Bridges were built at Glenwood Springs (1890), Baltzac (1904), Una (1910) and Lacy (1910 and 1912), totaling almost \$120,000 in erection costs. Of these only the Una Bridge is left. It proved pivotal to the career of Charles Sheely, one of the state's most notable bridgebuilders, for it was the structural failures of the Una and Lacy Bridges and the ensuing litigation which led to the reorganization of his firm to the Colorado Bridge and Construction Company. Technologically, this bridge is the last remaining example in the state of an uncommon vehicular truss type, the double-intersected Warren, and is therefore one of the more significant of the bridges included in the survey.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  NO  UNKNOWN  
20. EXISTING SURVEYS  NAR  NHSL  HABS  HAER-I  HAER  NPS  STATE  
 COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: GAR300-00-79. Colorado Department of Highways, Denver Colorado.

Garfield County Commissioners' Minutes: 4 September 1908 (Book C, page 539), 6 October 1909 (Book C, page 587), 2 November 1909 (Book C, page 588), 15 November 1909 (Book C, page 596), 17 November 1909 (Book C, page 604), 6 December 1909 (Book C, page 605), 7 June 1910 (Book C, page 629), 7 July 1910 (Book D, page 5), 9 March 1911 (Book 0, page 44), 2 July 1912 (Book D, page 105), 10 October 1912 (Book 0, page 123), 6 January 1913 (Book 0, page 138), 5 March 1913 (Book 0, page 153), 18 March 1913 (Book D, page 155-56), 10 April 1913 (Book D, page 158), 25 November 1913 (Book D, pages 189-90), 9 June 1915 (Book D, pages 285-86). Garfield County Courthouse, Glenwood Springs Colorado.

Register of Actions: Garfield County vs. C.G. Sheely et al. Case No. 1790, filed 15 June 1915. Civil suit for reparations on Lacy and Una Bridges. Provided by State Archives, Denver Colorado.

16th Biennial Report of the State Engineer, Colorado: 1911-1912. Denver: Smith-Brooks Printing Company, 1913. pp. 110-111. Field inspection by Clayton Fraser and Carl Hallberg, 19 October 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign

DATE  
1 December 1983

# HABS/HAER INVENTORY

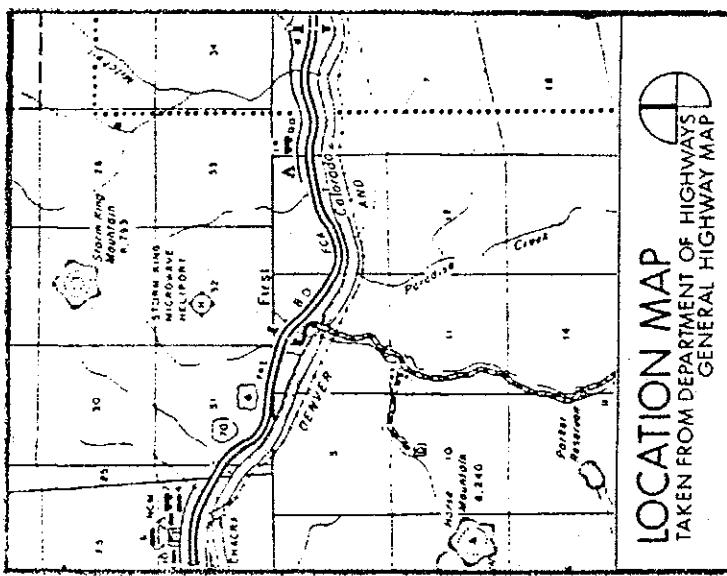
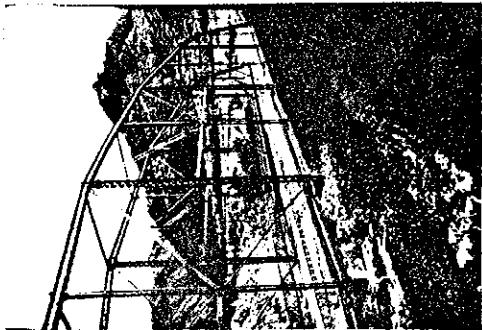
U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO.			5. ORIGINAL USE		6. PRESENT USE		7. CLASSIFICATION		8. BT&A: TRUSS: STEEL		9. RATING	
2. NAME(S) OF STRUCTURE	South Canon Bridge		GA05		roadway bridge							
3. SITE ADDRESS (STREET & NO.)	County Road 134 over Colorado River				roadway bridge (abandoned)							
4. CITY/VICINITY	4.6 miles west of Glenwood Springs											
5. STATE/COUNTY	S1/4 S2, T6S, R9W											
6. OWNER/ADMIN ADDRESS	Garfield County											
7. CITY/VICINITY	Glenwood Springs vicinity		Garfield		Garfield County Courthouse		8th and Colorado		Glenwood Springs		Colorado	
8. ZIP CODE	81601											
9. LATITUDE & LONGITUDE	39° 1' 30" N				105° 3' 45" W							
10. DATE	1914											
11. REGION	RMRO											
12. OWNER/ADMIN ADDRESS	Garfield County											
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	<p>Pin-connected, 10-panel steel Pennsylvania through truss</p> <p>span number: 1</p> <p>span length: 190'0"</p> <p>overall length: 192'0"</p> <p>overall height: 31'6"</p> <p>clearance hgt.: 14'8"</p> <p>roadway width : 15'7"</p> <p>end/top chrd: 2 channels w/ cover plate and lacing</p> <p>bottom chord: 2 rectangular eyebars</p> <p>vertical: 2 channels w/lacing; 4 angles w/lacing</p> <p>diagonal: 1-2 rectangular eyebars; 2 square eyebars w/ turnbuckles</p> <p>ftr./decking: asphalt over corrugated steel w/ steel stringers</p> <p>substructure: concrete wingwalls</p>											

Colorado Historic Bridge Survey (Page 153)  
HAER No. CO-30

When the Garfield County commissioners received the first petition late in 1902 from the Boston-Colorado Coal Company for a bridge over the Grand (Colorado) River to the newly opened mines in South Canon, they instead built a temporary ferry at the crossing. After eleven years of intermittent petitioning from the mine operators and nearby residents, the county finally advertised for proposals for a steel truss to replace the ferry. In 1914 the Missouri Valley Bridge and Iron Company was awarded the construction contract from a field of six bidders, for \$9430. Despite a delayed erection, in which the superstructure was washed away once, this 190' span was completed in May 1915. It still remains in place in good condition but has more recently been replaced with another bridge and abandoned.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION (SPECIFY THREAT)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN
16. SIGNIFICANCE	As a subtype of the Pratt configuration, the Pennsylvania truss was generally used in long-span applications in which mid-panel bracing was required for stability. It was an uncommon vehicular truss form, and only two pinned Pennsylvania through trusses are included in the survey. Both the South Canon Bridge and the Rifle Bridge (GA06) have been replaced and no longer function as roadway spans. One of the last remaining examples of a visually striking long-span bridge type, built by a nationally important bridge contractor, the South Canon Bridge is one of Colorado's more significant early bridges.								



## 117. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME		
19. PUBLIC ACCESSIBILITY	<input checked="" type="checkbox"/> YES, LIMITED	<input type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN		
20. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER					
<p>Garfield County Commissioners' Minutes: 26 December 1902 (Book C, page 289), 18 February 1903 (Book C, page 299), 19 February 1903 (Book C, page 300); 7 July 1903 (Book C, page 314), 27 November 1903 (Book C, page 329), 21 September 1904 (Book C, page 384), 15 November 1904 (Book C, page 387), 8 September 1911 (Book D, page 68), 9 May 1912 (Book D, page 99), 5 February 1913 (Book D, page 146), 25 November 1913 (Book D, page 189), 13 January 1914 (Book D, page 202), 4 February 1914 (Book D, page 204), 5 February 1914 (Book D, page 205), 24 February 1914 (Book D, page 207), 2 March 1914 (Book D, page 209), 8 April 1914 (Book D, pages 213-14), 11 April 1914 (Book D, page 217), 7 May 1914 (Book D, page 220), 20 July 1914 (Book D, page 232), 4 January 1915 (Book D, page 257), 2 February 1915 (Book D, page 260), 3 February 1915 (Book D, page 261), 15 May 1915 (Book D, page 266). Garfield County Courthouse, Glenwood Springs Colorado.</p> <p>Field inspection by Clayton Fraser and Carl Hallberg. 19 October 1983.</p>					
<input type="checkbox"/> NNR <input type="checkbox"/> NHI <input type="checkbox"/> HABS <input type="checkbox"/> HAER-1 <input type="checkbox"/> COUNTY <input type="checkbox"/> LOCAL <input type="checkbox"/> OTHER				<input type="checkbox"/> NPS <input type="checkbox"/> HAER <input type="checkbox"/> STATE	
AFFILIATION	Love Land Colorado				DATE 22 November 1983
Clayton Fraser and Carl Hallberg	Fraser design				
22. INVENTORIED BY					

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



1. SITE I.D. NO

2. NAME(S) OF STRUCTURE

Rifle Bridge  
Bridge over Colorado River

3. SITE ADDRESS (STREET & NO)

NE $\frac{1}{4}$  S16, T6S, R93W

4. CITY/VICINITY

Rifle

5. ORIGINAL USE

roadway bridge

6. PRESENT USE

roadway bridge

7. CLASSIFICATION

BT&A: TRUSS: STEEL

8. UTM ZONE

100

9. RATING

3

10. DATE

1909

11. REGION

RMRO

12. OWNER/ADMIN ADDRESS

Garfield

COUNTY

Garfield

STATE

Colorado

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

**Pin-connected, steel 12-panel Pennsylvania and 10-panel Parker through truss**

span number: 2  
span length: 240'0" (Pen.); 190'0" (Par.)  
overall length: 434'0"  
overall height: 34'4" (Pen.); 31'6" (Par.)  
clearance hgt.: 16'9"  
roadway width : 17'4"

end/top chrd: 2 channels w/ cover plate and lacing  
bottom chrd: 2 rectangular eyebars  
vertical: 2 channels w/ lacing  
diagonal: 2 rectangular eyebars; 1-2 square eyebars w/ turnbuckle  
flr./decking: asphalt over corrugated steel deck w/ steel stringers  
substructure: solid concrete pier w/ concrete wingwalls

After years of continued repairs to the substructure of the original 1890s bridge over the Grand (Colorado) River at Rifle, the Garfield County commissioners finally elected in 1908 to replace it completely. Bids were received in November from M.F. Levy, M.E. Moulton and Denver-based Charles G. Sheely. Low bidder at \$26,872, Sheely was awarded the contract; construction began early in 1909 and was completed by autumn. This dissimilar two-span truss, however, was situated poorly on a tight bend in the river and has required periodical maintenance to keep it in place. Despite construction of a concrete jetty in 1922 to divert the main channel, the Colorado continues to work against the pier and north abutment. Replaced with another span, this bridge now serves as a pedestrian crossing.

14. CONDITION

EXCELLENT

FAIR

RUINS

DETERIORATED

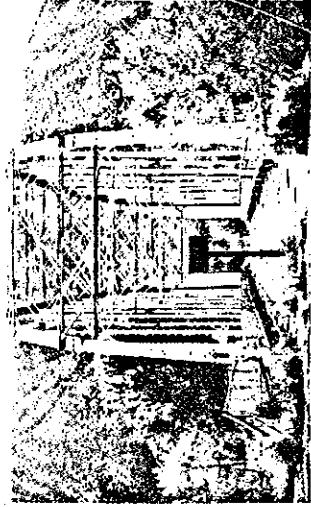
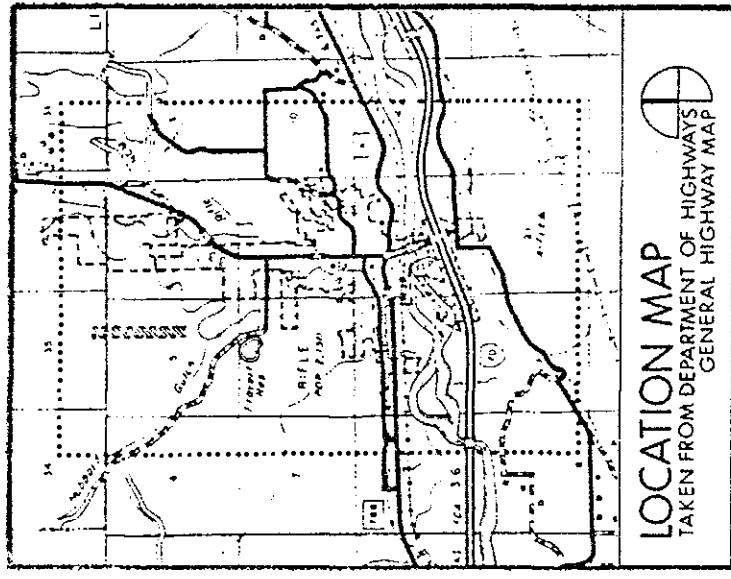
DEMOLITION?

(SPECIFY THREAT)

YES  NO  UNKNOWN  
bridge abandoned

15. SIGNIFICANCE

The Rifle Bridge is historically significant as a regionally important crossing of the Colorado River - the most expensive contracted for by Garfield County. Its Pennsylvania through span is the longest among the pinned trusses left in the state and is one of only two of its type in the survey; the Parker through is one of only two and is the longest of its type, and the two combined to form one bridge is unique. Erected by important Colorado bridge contractor C.G. Sheely, the Rifle Bridge is a visually striking long-span truss - one of Colorado's most significant vehicular bridges.



17 PHOTOS AND SKETCH MAP OF LOCATION

18 LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  
 YES, LIMITED  
 NO  
 UNKNOWN

20. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  
 EXISTING SURVEYS  
 COUNTY  
 LOCAL  
 HAER-1  
 HAER  
 NPS  
 STATE

Garfield County Commissioners' Minutes: 7 September 1900 (Book C, page 142), 15 December 1900 (Book C, pages 171-72)  
 2 January 1901 (Book C, page 17B), 3 April 1901 (Book C, page 200), 10 January 1902 (Book C, page 244), 14 January 1902 (Book C, page 246), 25 February 1902 (Book C, page 248), 26 February 1902 (Book C, page 249), 2 September 1902 (Book C, page 271), 8 April 1903 (Book C, page 307), 5 April 1904 (Book C, page 363), 5 June 1905 (Book C, page 418), 1 October 1906 (Book C, page 46B), 12 November 1906 (Book C, page 470), 6 February 1907 (Book C, page 484), 12 November 1908 (Book C, page 544), 30 November 1908 (Book C, page 553), 11 January 1909 (Book C, page 556), 6 April 1909 (Book C, page 566), 8 June 1909 (Book C, page 574), 10 February 1910 (Book C, pages 617-1B), 11 February 1911 (Book D, page 41), 5 February 1913 (Book D, page 147), 21 February 1913 (Book D, page 149), 9 June 1915 (Book D, page 285), 29 February 1916 (Book D, page 330), 3 April 1916 (Book D, page 335), 5 December 1921 (Book E, page 3BB).  
 "County Bridge at Rifle in Danger," Glenwood Post, Glenwood Colorado. 23 May 1929.  
 Field inspection by Clayton Fraser and Carl Hallberg. 19 October 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE

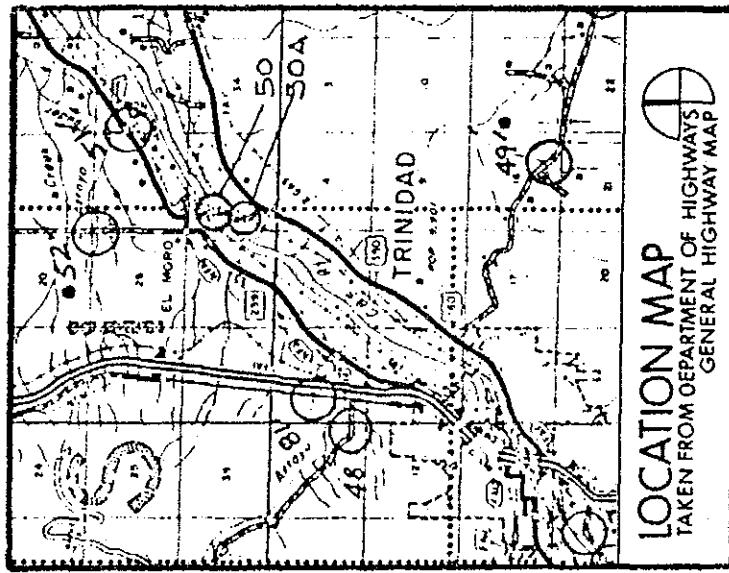
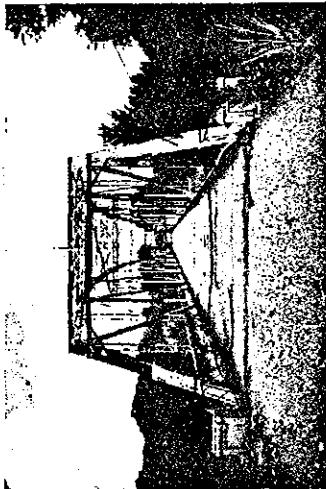
27 November 1983

## HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO												
2. NAME(S) OF STRUCTURE	Linden Avenue Bridge Main Street Bridge (before move)											
CDH: TP-18-A												
3. SITE ADDRESS (STREET & NO)	NW <sub>4</sub> S18, T33S, R63W											
Linden Avenue over Purgatoire River	LS01	5. ORIGINAL USE	roadway bridge	6. PRESENT USE	roadway bridge	7. CLASSIFICATION	BT&A: TRUSS: STEEL					9. RATING
							7	6	0	3		
											10. DATE 1912	
4. CITY/VICINITY	COUNTY	STATE	135 Animas Street	CITY	Hall	14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	15. RUINS	16. SIGNIFICANCE
Trinidad	Las Animas	Colorado	Trinidad	Colorado	81082		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
12. OWNER/ADMIN ADDRESS	City of Trinidad											
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	<p>Rigid-connected, 14-panel steel Pennsylvania through truss</p> <p>span number: 2</p> <p>span length: 219'0"</p> <p>overall length: 438'0"</p> <p>overall height: 35'0"</p> <p>clearance hgt.: 12'0"</p> <p>roadway width : 20'4"</p> <p>end/top chrd: 2 channels w/ cover plate and lacing</p> <p>bottom chord: 2 channels w/ batten plates</p> <p>vertical: 2 channels w/ lacing</p> <p>diagonal: 1 angle; 2 angles w/ batten plates</p> <p>fir./decking: asphalt over timber decking w/ timber stringers</p> <p>substructure: solid concrete pier; concrete cap on steel pile bent</p> <p>Lacking funds in early 1911 for two bridges over the Grand River at Clifton and on Main Street in Grand Junction, the Mesa County commissioners delayed the Main Street Bridge until an appropriation could be secured from the State Legislature the following year. Bids for construction were received in January 1912 from eight major bridgebuilding firms; the contract was given to the Patterson-Burghardt Construction Company of Denver for \$67,215. Using steel components manufactured by Hansel-Elcock of Chicago, the company completed the 6-span truss - the longest in the state - by year's end. After spring flooding in 1955 damaged the existing Linden Avenue Bridge over the Purgatoire River in Trinidad, the City acquired two of the spans of the Main Street Bridge from Grand Junction and erected them as a replacement. Now closed for repairs, the Linden Avenue Bridge will be reopened by the City to accommodate light traffic.</p>											
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN	16. SIGNIFICANCE		

Erected by one of Colorado's more important early bridge contracting firms, the Main Street Bridge was one of the longest trussed vehicular crossings in the state. The two spans of it which make up the Linden Avenue Bridge are notable as early rigid-connected examples of the Pennsylvania through truss - a configuration which later became something of a standard design for highway bridges in Colorado.



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY	<input checked="" type="checkbox"/> YES, LIMITED	<input type="checkbox"/> YES, UNLIMITED	20. EXISTING SURVEY	<input type="checkbox"/> NPS	<input type="checkbox"/> NHL	<input type="checkbox"/> HABS	<input type="checkbox"/> HAER	<input type="checkbox"/> NPS	<input checked="" type="checkbox"/> STATE
	<input type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN		<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL	<input type="checkbox"/> OTHER			

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: TP-18-A. Colorado Department of Highways, Denver Colorado.

Mesa County Commissioners' Minutes: 12 November 1909 (Book 4, page 273), 3 July 1911 (Book 5, page 6), 11 July 1911 (Book 5, page 8), 25 July 1911 (Book 5, page 19), 4 December 1911 (Book 5, page 52), 11 December 1911 (Book 5, page 58), 4 January 1912 (Book 5, page 63), 5 January 1912 (Book 5, page 64), 20 January 1912 (Book 5, page 69), 9 August 1912 (Book 5, page 128), 13 August 1912 (Book 5, page 132), 9 January 1913 (Book 5, page 182). Mesa County Courthouse, Grand Junction Colorado.

16th Biennial Report of the State Engineer, Colorado: 1911-1912. Denver: Smith-Brooks Printing Company, 1913. p.111.

Lee Just, Trinidad City Engineer. Oral interview with Clayton Fraser, 12 September 1983.

Original plans for Main Street Bridge. Prepared by Patterson-Burghardt Construction Company, 1912.

Field inspection by Clayton Fraser and Carl Hallberg, 8 September 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE  
1 December 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



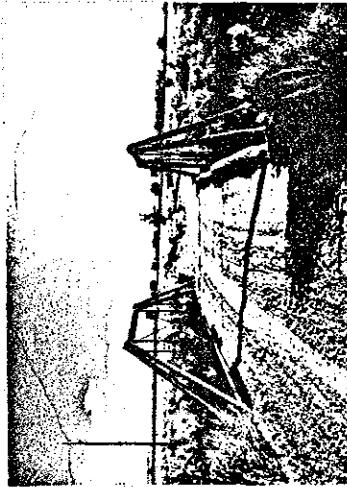
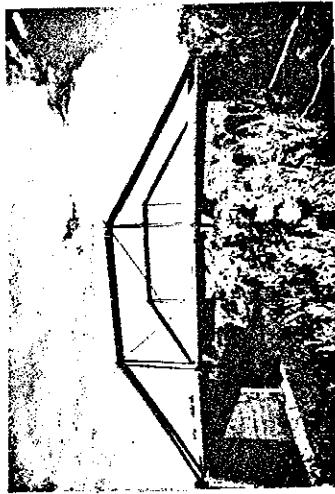
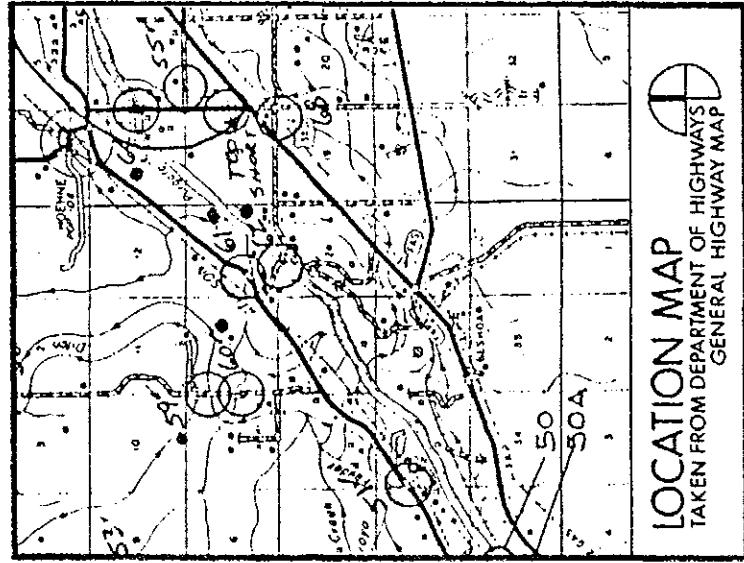
1. SITE I.O. NO

2. NAME(S) OF STRUCTURE <b>Avery Bridges</b> CDH: LA79-40-18-60 LA41-6-22-22-16	5. ORIGINAL USE roadway bridges	6. PRESENT USE roadway bridges	7. CLASSIFICATION BT&A: TRUSS: STEEL	8. UTM ZONE 1 3	9. EASTING 5 5 0 5 7 5	10. DATE 1914	11. REGION RMRO
3. SITE ADDRESS (STREET & NO.) County Road 79 over Leitensdorfer Arroyo	4. CITY/VICINITY NE½ S15, T32S, R63W; SE¼ S26, T31S, R66W	STATE Colorado	SCALE 1:24	12.5	12. QUAD NAME Hoehne (LS06)		
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.							
Pin/rigid-connected, 3-panel steel modified Avery pony trusses							
span number: 1 span length: 40' 0" overall length: 41' 0" roadway width: 12' 6"							

14. CONDITION EXCELLENT	15. DANGER OF DEMOLITION? (SPECIFY THREAT) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN	16. SIGNIFICANCE FAIR	17. DEteriorated <input type="checkbox"/> RUINS
<p>In May 1914 the Las Animas County Board of Commissioners contracted with the Trinidad Foundry and Machine Company for two 40' steel-and-concrete trusses on the Trinidad-E1 Moro-Apisapa wagon road. For \$1775 Trinidad erected these two short-span bridges that year. The design of these identical trusses is based upon a patent filed by Colby M. Avery in 1894, modified with the substitution of a cambered monolithic concrete slab for the deck instead of the more traditional timber decking. Featuring a single steel pipe top chord and duplex pipe end posts with pinned bottom chord connections, it was used by the Trinidad Foundry for a number of bridges erected in the region during the 1910s. These two spans are the only ones remaining in public use; both are structurally sound and in unaltered condition.</p>			

Essentially a diagonally braced queenpost truss, the Avery truss is one of many bridge designs patented in the late 19th century which never received widespread use. In Colorado the Trinidad Foundry is the only company known to have fabricated and erected Avery trusses, and of the few that were built, only two of this esoteric type of span are known to exist still. As such they are technologically significant for their nonstandard design and construction.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  YES, LIMITED  UNKNOWN  NO

20. EXISTING SURVEYS  NR  NHL  HAER-1  HAER  NPS  STATE  
 COUNTY  LOCAL  OTHER

21. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

**Structure Inventory and Appraisal:** LA79-40-18-60, LA41.6-22-22-16. Colorado Department of Highways, Denver Colorado.

Agreement between Las Animas County and Trinidad Foundry and Machine Company, dated 19 May 1914. Located in the Las Animas County Accounting Department Vault, Trinidad Colorado.  
Highway Planning Survey photograph: P-19-W. Colorado Department of Highways, Denver Colorado. 5 June 1936.  
U.S. Patent Office Official Gazette, 2 April 1895. Patent application 536,680 for truss bridge, Colby M. Avery, Rockford Illinois.

Field inspection by Clayton Fraser and Carl Hallberg, 8 September 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign Loveland Colorado

DATE  
26 November 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO		
2. NAME(S) OF STRUCTURE	Elson Bridge	
Bridge over the Purgatoire River		
CDH:	LA36-41-18-62	
3. SITE ADDRESS (STREET & NO)	County Road 36 over Purgatoire River	
4.0 miles northeast of El Moro		
NW $\frac{1}{4}$ , S24, T32S, R63W		
4. CITY/VICINITY	Las Animas County	
5. ORIGINAL USE	roadway bridge	
6. PRESENT USE	roadway bridge	
7. CLASSIFICATION	BT&A: TRUSS: STEEL	
8. UTM ZONE	1	
9. EASTING	3	
10. DATE	1905	
11. REGION	RMRO	
12. OWNER/ADMIN ADDRESS	Las Animas County Courthouse First and Maple	
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	Trinidad Colorado 81082	

Pin-connected, 8-panel steel Pratt through truss  
 span number: 1  
 span length: 150'0"  
 overall length: 152'0"  
 overall height: 24'0"  
 clearance ht.: 15'0"  
 roadway width : 16'0"

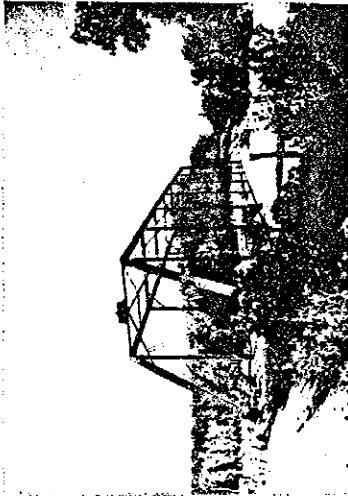
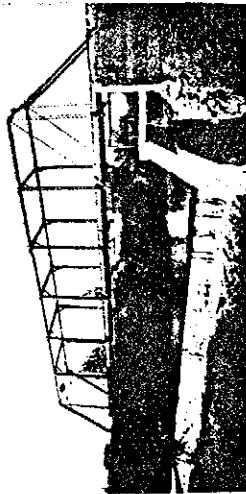
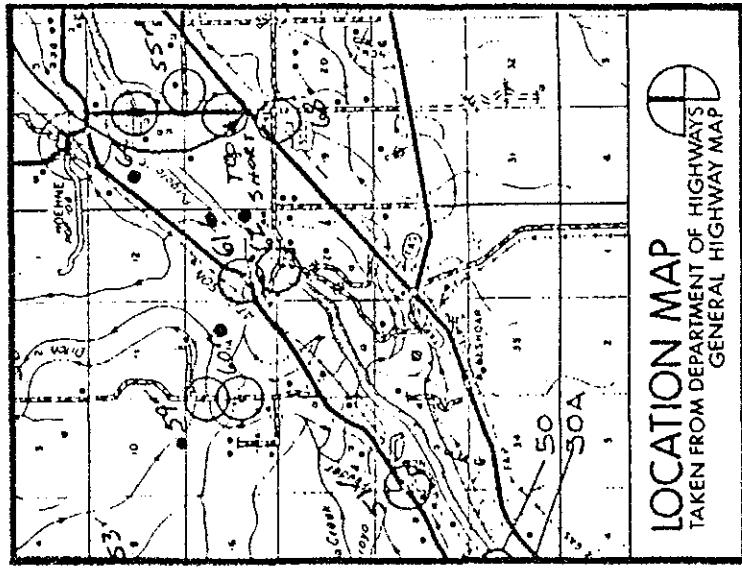
end/top chrd: 2 channels w/ cover plate and lacing  
 bottom chord: 2 rectangular eyebars  
 vertical: 2 channels w/ lacing  
 diagonal: 2 rectangular eyebars; 1 round eyebar counter w/ turnblk1.  
 flr./decking: timber decking w/ timber stringers and steel floor beams  
 substructure: concrete wingwalls

In 1905 the Las Animas County commissioners advertised for a new bridge over the Purgatoire River at the Elson Ranch crossing. Bids were received from the Marsh Bridge Company of Des Moines, Iowa, the M.J. Patterson Bridge Company of Denver and the Pueblo Bridge Company. In March the construction contract for this 150' Pratt through truss was awarded to Pueblo Bridge, the most prolific trussbuilder in the region, for \$3868. Located over a diversion dam and irrigation canal headgate, the bridge remains unaltered.

14. CONDITION	<input checked="" type="checkbox"/> EXCELLENT	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> UNKNOWN
16. SIGNIFICANCE					

In pristine condition and setting, the Elson Bridge is a well-preserved early example of the pin-connected steel Pratt through truss - the most commonly constructed vehicular truss type of the 1890s and early 1900s. It shares the distinction with the Commercial Street Bridge (LS20) as the oldest roadway bridge spanning the Purgatoire River.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEYS	<input type="checkbox"/> NR	<input type="checkbox"/> NHL	<input type="checkbox"/> HAER
	<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL	<input type="checkbox"/> OTHER
21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER	<input type="checkbox"/> NPS <input type="checkbox"/> STATE		

Structure Inventory and Appraisal: LA36-41-18-62. Colorado Department of Highways, Denver Colorado.  
Las Animas County Commissioners' Minutes: 16 March 1905 (Book 11, page 576). Las Animas County Courthouse,  
Trinidad Colorado.

Builder's plate on bridge: "1905 Built by Pueblo Bridge Co. Pueblo Colo."  
Field inspection by Clayton Fraser and Carl Hallberg. 8 September 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign

DATE

13 September 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO			
2. NAMES OF STRUCTURE			
Commercial Street Bridge Bridge over Purgatoire River COH: TP-18-B	LS20	5. ORIGINAL USE roadway bridge	7. CLASSIFICATION BT&A: ARCH: REINFORCED CONCRETE
3. SITE ADDRESS (STREET & NO)	Commercial Street over Purgatoire River SW <sup>4</sup> S13, T33S, R64W		
4. CITY/VICINITY	Trinidad	6. PRESENT USE roadway bridge	8. UTM ZONE 1 3
12. OWNER/ADMIN ADDRESS	City of Trinidad	STATE Las Animas	9. RATING 4
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	<p><b>Segmental, reinforced concrete Luten arch</b></p> <p>span number: 2  span length: 70'0"  overall length: 176'0"  roadway width : 45'2"</p> <p>Under a bridgebuilding program prompted by the Trinidad City council, the Las Animas County commissioners and the council jointly solicited bids for a wagon bridge on Commercial Street in October 1904 to replace the existing two-span through truss. After rejecting the first set of proposals in December, a second set was submitted to the city council by several bridgebuilders. The \$25,000 construction contract was awarded to the Marsh Bridge Company of Des Moines, Iowa, on 19 January 1905; of this the county paid two-thirds, the city one-third. Using a concrete reinforcing patent held by Daniel Luten, Marsh built this extremely elliptical filled arch, termed a Luten arch, that year. The bridge still serves as an important access to the Trinidad central business district from the north.</p>		

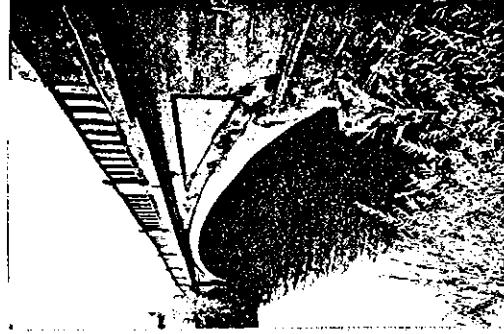
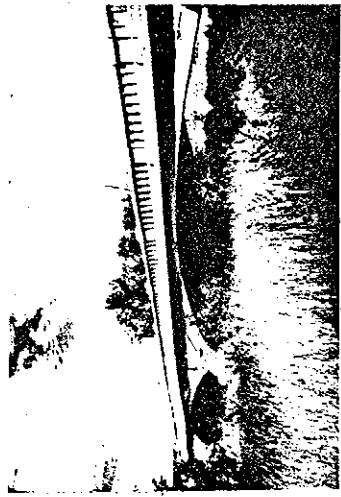
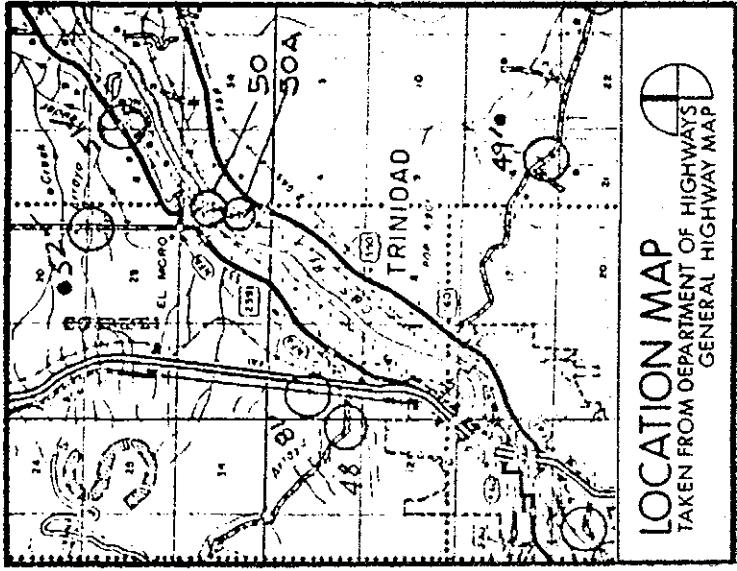
14. CONDITION  EXCELLENT  GOOD  FAIR  DETERIORATED

15. DANGER OF DEMOLITION?  RUNS  UNKNOWN  
(SPECIFY THREAT)

16. SIGNIFICANCE

After the turn of the century, the preferred alternative to the steel truss for short-span vehicular bridges was generally considered to be the concrete arch. More solid under traffic and better resistant to flooding, it was also valued as more aesthetically refined than the starkly functional truss. The Commercial Street Bridge is a direct representation of that trend in Colorado. The oldest concrete structure in the survey, it is directly associated with two pivotal figures in bridge technology: James Marsh and Daniel Luten and is the only bridge in Colorado known to have been built by Marsh's company (another, the Rainbow Arch Bridge, MRO3, was designed by Marsh based on his patent). A regionally important crossing of the Purgatoire River, it is one of Colorado's most technologically significant spans.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN

20. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  NR  NHL  HAER-1  HAER  NPS  STATE  
 COUNTY  LOCAL  OTHER

21. AFFILIATION BY  Clayton Fraser and Carl Hallberg

**Structure Inventory and Appraisal:** TP-18-B. Colorado Department of Highways, Denver Colorado.  
Las Animas County Commissioners' Minutes: 4 October 1904 (Book 11, page 461), 6 December 1904 (Book 11, page 503), 5 January 1905 (Book 11, page 543), 3 April 1905 (Book 11, page 578), 8 May 1905 (Book 11, page 597). Las Animas County Courthouse, Trinidad Colorado.

National Bridge Company. "Reinforced Concrete Bridges: Luten Patents." n.p.:1907. Manufacturer's brochure.  
Luten, Daniel B. "Arch-Bridge," Patent application filed 2 August 1899. United States Patent Office, Official Gazette of the U.S. Patent Office, 21 November 1911, vol. 172, no. 3,  
Builder's plate on bridge: "Built by Marsh Bridge Company Des Moines, Iowa. 1905. Under Patents of Concrete-Steel Engineering Company, New York City".  
Field inspection by Clayton Fraser and Carl Hallberg, 8 September 1983.

22. INVENTORIED BY  Clayton Fraser and Carl Hallberg  AFFILIATION  Fraserdesign Loveland Colorado  DATE  26 September 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO	2. NAME(S) OF STRUCTURE		3. SITE ADDRESS (STREET & NO)	4. CITY/VICINITY	5. ORIGINAL USE	6. PRESENT USE	7. CLASSIFICATION	8. UTM ZONE	9. EASTING	10. DATE	11. REGION	12. OWNER/ADMIN ADDRESS	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	
	Bridge over Burro Canon		State Highway 12 over Burro Canon	2 mile east of Madrid	roadway bridge	highway bridge	BT&A: ARCH: STONE	1	3	1936	RMRO		Colorado Department of Highways	4201 East Arkansas Avenue Denver Colorado 80222
CDH: p-18-L			SE $\frac{1}{4}$ S 35, T 33S, R 65N	COUNTY	Las Animas	STATE		5	2					
							SCALE	1:24	1:62.5		QUAD NAME	Valdez		
							OTHER							

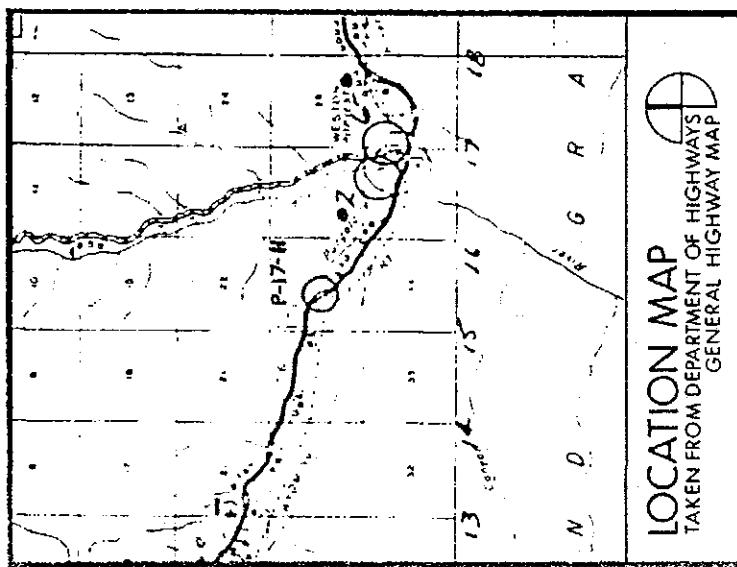
The Burro Canon Bridge is one of three masonry arch bridges sponsored by the Las Animas County Board of Commissioners and the Works Progress Administration in the late 1930s. Built in 1936, it is comprised of three skewed semicircular arches lined with multiplates fabricated by the Hardesty Manufacturing Company, the largest producer of culverts for Colorado. The bridge is faced with rusticated stone and grapevined mortar joints, a trademark of WPA-built structures in southeast Colorado, and features beveled stone piers, corbelled copings and tapered voussoirs for the arches. "WPA" and "1936" are cast in raised letters in the abutment bulkheads. Situated on the major route west from Trinidad, the Burro Canon Bridge remains structurally and architecturally unaltered, and with a sufficiency rating of 76.9, it is a substantial structure.

guardrails : solid stone parapet walls w/ corbelled stone coping  
 span number: 3  
 span length: 17'1" (middle); 16'1" (outside) fir./decking: asphalt over earth fill  
 overall length: 67'8"  
 roadway width : 30'0"

Semicircular, stone ashlar multiplate deck arch, skewed

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN
16. SIGNIFICANCE	Among the thirty coursed stone roadway bridges built by WPA forces in southeast Colorado in the 1930s, most are low-profile, short-span structures, built to span minor creeks and draws. The Burro Canon Bridge is a notable standout from the group. The only WPA bridge in the state with a skewed configuration, it is also the only one which uses a multiplate liner. Typically well-crafted and in pristine condition, it is a handsome structure - a locally important crossing and a significant example of technologically archaic bridge construction built by one of Roosevelt's relief agencies during the Depression.								

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN

NO

20. EXISTING SURVEYS  NPS  NHL  HABS  HAER  HAER-I  OTHER

COUNTY

STATE

21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: P-18-L. Colorado Department of Highways, Denver Colorado.  
Field inspection by Clayton Fraser and Carl Hallberg, 7 September 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE

18 January 1984

# HABS/HAER INVENTORY



U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO.			5. ORIGINAL USE	6. PRESENT USE	7. CLASSIFICATION	8. UTM ZONE	EASTING	NORTHING	9. RATING
2. NAME OF STRUCTURE	Fifth Street Bridge		ME09	highway bridge	BT&A: TRUSS: STEEL	1	7   1	0   0	3
3. SITE ADDRESS (STREET & NO.)	Bridge over Colorado River		CDH: H-02-H	highway bridge		2	1   0	7   0	0
4. CITY/VICINITY	U.S. Highway 50 over Colorado River		SN $\frac{1}{2}$ S23, T1S, R1W			3	5   0	5   0	0
12. OWNER/ADMIN ADDRESS	Colorado Department of Highways		4201 East Arkansas Avenue	Denver Colorado 80222		4	2   5	3   2	0
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.									
<p><b>Rigid-connected, 9-panel steel Parker through truss</b></p> <p>span number: 4</p> <p>span length: 185'0"</p> <p>overall length: 791'0"</p> <p>overall height: 31'9"</p> <p>clearance hgt.: 13'6"</p> <p>roadway width : 24'0"</p> <p>end/top chrd: 2 channels w/ cover plate and lacing</p> <p>bottom chord: 2 channels w/ batten plates</p> <p>vertical: 1 wide flange</p> <p>diagonal: 1 wide flange</p> <p>fir./decking: monolithic concrete slab deck w/ steel floor beams</p> <p>substructure: concrete wingwalls w/ spill-through concrete piers</p>									

14. CONDITION  EXCELLENT  GOOD  FAIR  DETERIORATED  RUINS

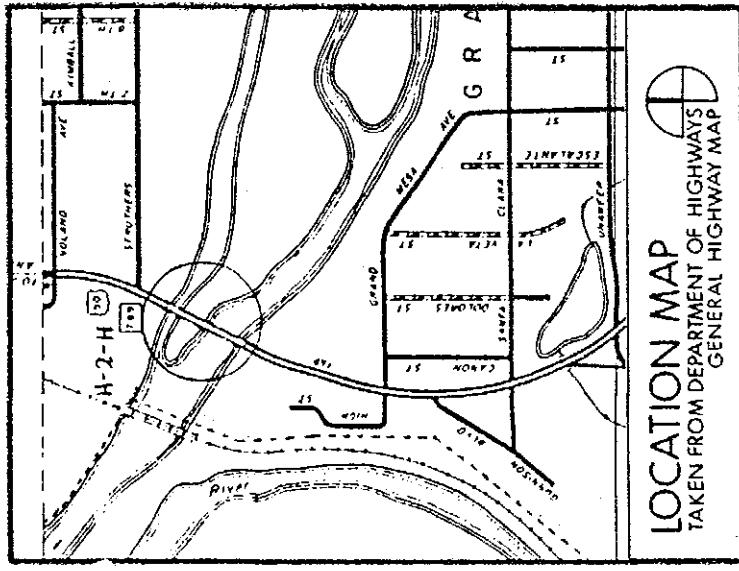
15. DANGER OF DEMOLITION?  YES  NO  UNKNOWN  
(SPECIFY THREAT)

16. SIGNIFICANCE

During the 1920s and 1930s the Colorado State Highway Department designed and contracted for two basic types of steel highway trusses: the Camelback pony for spans 125' and under and the Parker through for spans 125' and over. Although other generic types such as the Pratt through or Pennsylvania through were sometimes used, the riveted Parker was the design of choice for long-span highway crossings. Two multi-span combinations of that type remain in use on the state highway system - the Delta Bridge (DL08) and the Fifth Street Bridge. Both are significant as unusual multiple-span examples of a common highway truss type. This bridge additionally functions as a regionally important crossing of the Colorado River - the site of the first State Bridge - for which it is historically significant.



17 PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
	<input type="checkbox"/> NO		
21. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			
20. EXISTING SURVEYS	<input type="checkbox"/> NR	<input type="checkbox"/> NHL	<input type="checkbox"/> NHABS
	<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL	<input type="checkbox"/> OTHER
Structure Inventory and Appraisal: H-02-H. Colorado Department of Highways, Denver Colorado.			
"Abstract of Projects for Which Internal Improvement Income or Permanent Funds have been Appropriated." State Engineer's Office, 1906.			
Dedication plate on bridge: "Colorado State Highway Department 1933".			
Field inspection by Clayton Fraser and Susan Cason, 16 November 1983.			
22. INVENTORIED BY		AFFILIATION	DATE
Clayton Fraser and Carl Hallberg		Frasersdesign	18 January 1984
Loveland Colorado			

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



1. SITE I.D. NO

2. NAME(S) OF STRUCTURE  
Black Bridge  
Gunnison Bridge  
CDH: MESA-25, 3-B, 9

3. SITE ADDRESS (STREET & NO)  
25.30 Road over Gunnison River  
NE $\frac{1}{4}$  S27, T1S, R100W

1. SITE I.D. NO	ME01	5. ORIGINAL USE roadway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL	9. RATING 7 6 0 3
2. NAME(S) OF STRUCTURE Black Bridge Gunnison Bridge CDH: MESA-25, 3-B, 9		6. PRESENT USE roadway bridge (abandoned)	10. DATE 1891	
3. SITE ADDRESS (STREET & NO) 25.30 Road over Gunnison River NE $\frac{1}{4}$ S27, T1S, R100W		8. UTM ZONE 1	11. REGION RMRO	
4. CITY/VICINITY Grand Junction	COUNTY Mesa	STATE Colorado	SCALE 1:24 1:62.5	QUAD NAME Grand Junction
Mesa County	Mesa County Courthouse	619 East Main	Grand Junction Colorado	

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Pin-connected, 11-panel steel Pratt through truss

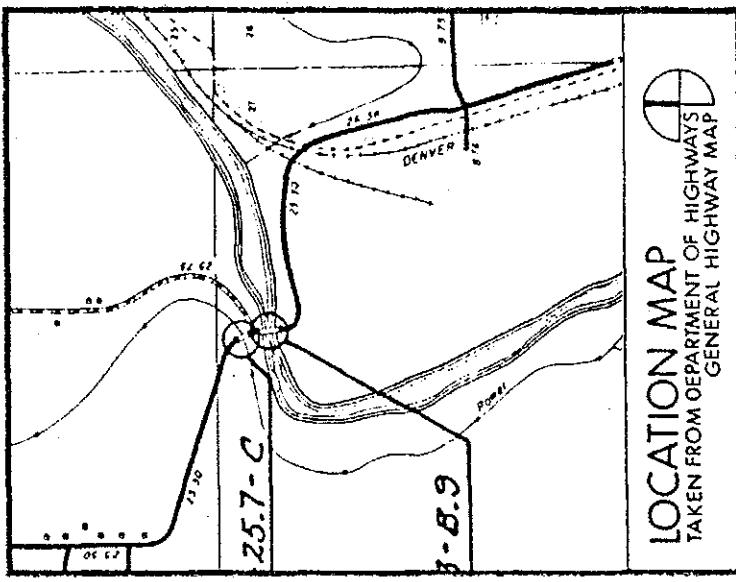
span number: 1  
span length: 217' 8"  
overall length: 219' 0"  
overall height: 30' 0"  
clearance ht.: 14' 10"  
roadway width: 15' 0"

end/top chrd: 2 channels w/ cover and batten plates  
bottom chord: 2 rectangular eyebars  
vertical: 2 sq. eyebars @ end panel; 2 channels w/ lacing other diagonal: 2 rectangular eyebars; 1 square eyebar w/ turnbuckle flr./decking: asphalt over corrugated steel deck w/ steel stringers  
substructure: ashlar stone abutments

Five years after the completion in 1886 of the first state-funded bridge, over the Grand (Colorado) River in Grand Junction, the Mesa County Board of Commissioners began to consider erection of a second major span in the city - over the Gunnison River at the ferry site near its mouth. Bids for construction were let in November 1890. The following January the contract was awarded to the Kansas City Bridge and Iron Company for \$8273. Using rolled steel components manufactured by Carnegie, Kansas City erected this long-span Pratt through truss by August 1891, and the approaches were graded by October. The bridge has been in continuous use since, with only minor deck alteration to its north portal. However, recent damage to its substructure during spring flooding in 1983 has reduced the bridge's capacity, causing its closing; its future disposition is now uncertain.

14. CONDITION EXCELLENT	GOOD	FIR	DETERIORATED	RUINS	DANGER OF DEMOLITION (SPECIFY THREAT)	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> UNKNOWN
bridge abandoned						16. SIGNIFICANCE

The Black Bridge is technologically significant as the longest and tallest Pratt roadway truss remaining in Colorado; it is exceeded in span length by only one other pinned truss in the survey - the Pennsylvania span of the Rifle Bridge (GA06; 240'). Historically the bridge is significant for several reasons: for decades a pivotal crossing for southwest Colorado, it is the oldest originally placed vehicular bridge over the Gunnison River; it is the oldest bridge in the county and one of the oldest in the state; and it is the only remaining bridge traceable to the Kansas City Bridge Company, one of the early major Midwestern bridge contracting firms. A spectacular early long-span truss, the Black Bridge is one of Colorado's most significant vehicular bridges.



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input checked="" type="checkbox"/> YES, LIMITED	<input type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEYS			
		<input type="checkbox"/> NR	<input type="checkbox"/> NHL
		<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL
		<input type="checkbox"/> HAER	<input type="checkbox"/> NPS
		<input type="checkbox"/> HAER-1	<input type="checkbox"/> OTHER
21. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			

Structure Inventory and Appraisal: MESA-25.3-B.9. Colorado Department of Highways, Denver Colorado.

Mesa County Commissioners' Minutes: 18 November 1890 (Book 1, page 444), 5 January 1891 (Book 1, page 445), 14 January 1891 (Book 1, page 449), 17 February 1891 (Book 1, page 453), 15 August 1891 (Book 1, page 474), 6 October 1891 (Book 1, page 478), 4 April 1892 (Book 1, page 504). Mesa County Courthouse, Grand Junction Colorado.

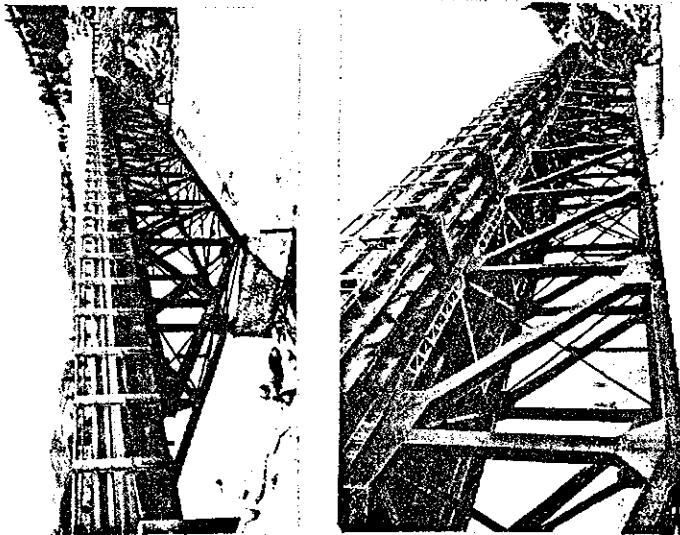
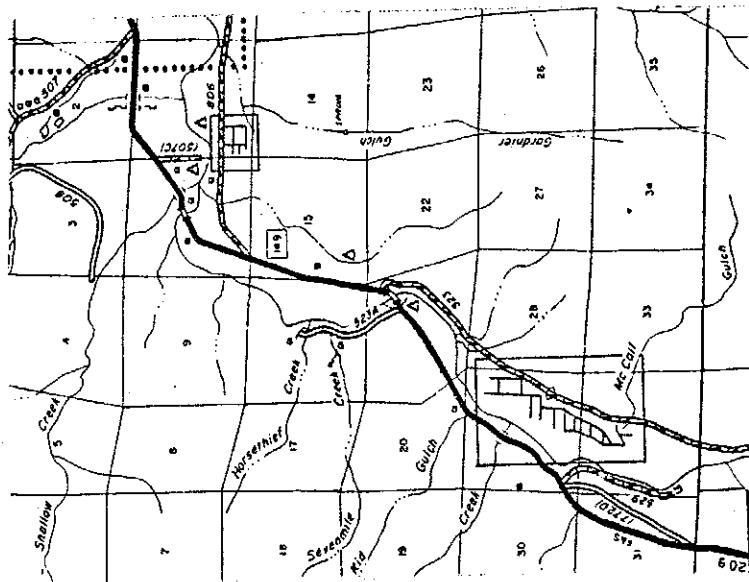
Field inspection by Clayton Fraser and Susan Cason. 16 November 1983.

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO			2. NAME(S) OF STRUCTURE	M101		5. ORIGINAL USE	roadway bridge		7. CLASSIFICATION	BT&A: TRUSS: STEEL			9. RATING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Mineral County Creede		Mineral Creede		STATE Colorado		STATE Colorado		8. UTM ZONE	1	3	5	7	9. NORTHING	11. REGION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
12. OWNER/ADMIN ADDRESS		13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.		14. CONDITION		15. DETERIORATED		SCALE	1:24	1:32.5	1:65	1:130	1:180	1:240	1:300	1:360	1:480	1:540	1:720	1:960	1:1200	1:1440	1:1800	1:2160	1:2400	1:2880	1:3240	1:3600	1:4080	1:4320	1:4640	1:5040	1:5440	1:5760	1:6080	1:6400	1:6720	1:7040	1:7360	1:7680	1:8000	1:8320	1:8640	1:9040	1:9360	1:9680	1:10000	1:10320	1:10640	1:10960	1:11280	1:11600	1:11920	1:12240	1:12560	1:12880	1:13200	1:13520	1:13840	1:14160	1:14480	1:14800	1:15120	1:15440	1:15760	1:16080	1:16400	1:16720	1:17040	1:17360	1:17680	1:18000	1:18320	1:18640	1:18960	1:19280	1:19600	1:19920	1:20240	1:20560	1:20880	1:21200	1:21520	1:21840	1:22160	1:22480	1:22800	1:23120	1:23440	1:23760	1:24080	1:24400	1:24720	1:25040	1:25360	1:25680	1:26000	1:26320	1:26640	1:26960	1:27280	1:27600	1:27920	1:28240	1:28560	1:28880	1:29200	1:29520	1:29840	1:30160	1:30480	1:30800	1:31120	1:31440	1:31760	1:32080	1:32400	1:32720	1:33040	1:33360	1:33680	1:34000	1:34320	1:34640	1:34960	1:35280	1:35600	1:35920	1:36240	1:36560	1:36880	1:37200	1:37520	1:37840	1:38160	1:38480	1:38800	1:39120	1:39440	1:39760	1:40080	1:40400	1:40720	1:41040	1:41360	1:41680	1:42000	1:42320	1:42640	1:42960	1:43280	1:43600	1:43920	1:44240	1:44560	1:44880	1:45200	1:45520	1:45840	1:46160	1:46480	1:46800	1:47120	1:47440	1:47760	1:48080	1:48400	1:48720	1:49040	1:49360	1:49680	1:50000	1:50320	1:50640	1:50960	1:51280	1:51600	1:51920	1:52240	1:52560	1:52880	1:53200	1:53520	1:53840	1:54160	1:54480	1:54800	1:55120	1:55440	1:55760	1:56080	1:56400	1:56720	1:57040	1:57360	1:57680	1:58000	1:58320	1:58640	1:58960	1:59280	1:59600	1:59920	1:60240	1:60560	1:60880	1:61200	1:61520	1:61840	1:62160	1:62480	1:62800	1:63120	1:63440	1:63760	1:64080	1:64400	1:64720	1:65040	1:65360	1:65680	1:66000	1:66320	1:66640	1:66960	1:67280	1:67600	1:67920	1:68240	1:68560	1:68880	1:69200	1:69520	1:69840	1:70160	1:70480	1:70800	1:71120	1:71440	1:71760	1:72080	1:72400	1:72720	1:73040	1:73360	1:73680	1:74000	1:74320	1:74640	1:74960	1:75280	1:75600	1:75920	1:76240	1:76560	1:76880	1:77200	1:77520	1:77840	1:78160	1:78480	1:78800	1:79120	1:79440	1:79760	1:80080	1:80400	1:80720	1:81040	1:81360	1:81680	1:82000	1:82320	1:82640	1:82960	1:83280	1:83600	1:83920	1:84240	1:84560	1:84880	1:85200	1:85520	1:85840	1:86160	1:86480	1:86800	1:87120	1:87440	1:87760	1:88080	1:88400	1:88720	1:89040	1:89360	1:89680	1:90000	1:90320	1:90640	1:90960	1:91280	1:91600	1:91920	1:92240	1:92560	1:92880	1:93200	1:93520	1:93840	1:94160	1:94480	1:94800	1:95120	1:95440	1:95760	1:96080	1:96400	1:96720	1:97040	1:97360	1:97680	1:98000	1:98320	1:98640	1:98960	1:99280	1:99600	1:99920	1:100240	1:100560	1:100880	1:101200	1:101520	1:101840	1:102160	1:102480	1:102800	1:103120	1:103440	1:103760	1:104080	1:104400	1:104720	1:105040	1:105360	1:105680	1:106000	1:106320	1:106640	1:106960	1:107280	1:107600	1:107920	1:108240	1:108560	1:108880	1:109200	1:109520	1:109840	1:110160	1:110480	1:110800	1:111120	1:111440	1:111760	1:112080	1:112400	1:112720	1:113040	1:113360	1:113680	1:114000	1:114320	1:114640	1:114960	1:115280	1:115600	1:115920	1:116240	1:116560	1:116880	1:117200	1:117520	1:117840	1:118160	1:118480	1:118800	1:119120	1:119440	1:119760	1:120080	1:120400	1:120720	1:121040	1:121360	1:121680	1:122000	1:122320	1:122640	1:122960	1:123280	1:123600	1:123920	1:124240	1:124560	1:124880	1:125200	1:125520	1:125840	1:126160	1:126480	1:126800	1:127120	1:127440	1:127760	1:128080	1:128400	1:128720	1:129040	1:129360	1:129680	1:130000	1:130320	1:130640	1:130960	1:131280	1:131600	1:131920	1:132240	1:132560	1:132880	1:133200	1:133520	1:133840	1:134160	1:134480	1:134800	1:135120	1:135440	1:135760	1:136080	1:136400	1:136720	1:137040	1:137360	1:137680	1:138000	1:138320	1:138640	1:138960	1:139280	1:139600	1:139920	1:140240	1:140560	1:140880	1:141200	1:141520	1:141840	1:142160	1:142480	1:142800	1:143120	1:143440	1:143760	1:144080	1:144400	1:144720	1:145040	1:145360	1:145680	1:146000	1:146320	1:146640	1:146960	1:147280	1:147600	1:147920	1:148240	1:148560	1:148880	1:149200	1:149520	1:149840	1:150160	1:150480	1:150800	1:151120	1:151440	1:151760	1:152080	1:152400	1:152720	1:153040	1:153360	1:153680	1:154000	1:154320	1:154640	1:154960	1:155280	1:155600	1:155920	1:156240	1:156560	1:156880	1:157200	1:157520	1:157840	1:158160	1:158480	1:158800	1:159120	1:159440	1:159760	1:160080	1:160400	1:160720	1:161040	1:161360	1:161680	1:162000	1:162320	1:162640	1:162960	1:163280	1:163600	1:163920	1:164240	1:164560	1:164880	1:165200	1:165520	1:165840	1:166160	1:166480	1:166800	1:167120	1:167440	1:167760	1:168080	1:168400	1:168720	1:169040	1:169360	1:169680	1:170000	1:170320	1:170640	1:170960	1:171280	1:171600	1:171920	1:172240	1:172560	1:172880	1:173200	1:173520	1:173840	1:174160	1:174480	1:174800	1:175120	1:175440	1:175760	1:176080	1:176400	1:176720	1:177040	1:177360	1:177680	1:178000	1:178320	1:178640	1:178960	1:179280	1:179600	1:179920	1:180240	1:180560	1:180880	1:181200	1:181520	1:181840	1:182160	1:182480	1:182800	1:183120	1:183440	1:183760	1:184080	1:184400	1:184720	1:185040	1:185360	1:185680	1:186000	1:186320	1:186640	1:186960	1:187280	1:187600	1:187920	1:188240	1:188560	1:188880	1:189200	1:189520	1:189840	1:190160	1:190480	1:190800	1:191120	1:191440	1:191760	1:192080	1:192400	1:192720	1:193040	1:193360	1:193680	1:194000	1:194320	1:194640	1:194960	1:195280	1:195600	1:195920	1:196240	1:196560	1:196880	1:197200	1:197520	1:197840	1:198160	1:198480	1:198800	1:199120	1:199440	1:199760	1:200080	1:200400	1:200720	1:201040	1:201360	1:201680	1:202000	1:202320	1:202640	1:202960	1:203280	1:203600	1:203920	1:204240	1:204560	1:204880	1:205200	1:205520	1:205840	1:206160	1:206480	1:206800	1:207120	1:207440	1:207760	1:208080	1:208400	1:208720	1:209040	1:209360	1:209680	1:210000	1:210320	1:210640	1:210960	1:211280	1:211600	1:211920	1:212240	1:212560	1:212880	1:213200	1:213520	1:213840	1:214160	1:214480	1:214800	1:215120	1:215440	1:215760	1:216080	1:216400	1:216720	1:217040	1:217360	1:217680	1:218000	1:218320	1:218640	1:218960	1:219280	1:219600	1:219920	1:220240	1:220560	1:220880	1:221200	1:221520	1:221840	1:222160	1:222480	1:222800	1:223120	1:223440	1:223760	1:224080	1:224400	1:224720	1:225040	1:225360	1:225680	1:226000	1:226320	1:226640	1:226960	1:227280	1:227600	1:227920	1:228240	1:228560	1:228880	1:229200	1:229520	1:229840	1:230160	1:230480	1:230800	1:231120	1:231440	1:231760	1:232080	1:232400	1:232720	1:233040	1:233360	1:233680	1:234000	1:234320	1:234640	1:234960	1:235280	1:235600	1:235920	1:236240	1:236560	1:236880	1:237200	1:237520	1:237840	1:238160	1:238480	1:238800	1:239120	1:239440	1:239760	1:240080	1:240400	1:240720	1:241040	1:241360	1:241680	1:242000	1:242320	1:242640	1:242960	1:243280	1:243600	1:243920	1:244240	1:244560	1:244880	1:245200	1:245520	1:245840	1:246160	1:246480	1:246800	1:247120	1:247440	1:247760	1:248080	1:248400	1:248720	1:249040	1:249360	1:249680	1:250000	1:250320	1:250640	1:250960	1:251280	1:251600	1:251920	1:252240	1:252560	1:252880	1:253200	1:253520	1:253840	1:254160	1:254480	1:254800	1:255120	1:255440	1:255760	1:256080	1:256400	1:256720	1:257040	1:257360	1:257680	1:258000	1:258320	1:258640	1:258960	1:259280	1:259600	1:259920	1:260240	1:260560	1:260880	1:261200	1:261520	1:261840	1:262160	1:262480	1:262800	1:263120	1:263440	1:263760	1:264080	1:264400	1:264720	1:265040	1:265360	1:265680	1:266000	1:266320	1:266640	1:266960	1:267280	1:267600	1:267920	1:268240	1:268560	1:268880	1:269200	1:269520

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  UNKNOWN  NO

20. EXISTING SURVEYS  NPS  NHL  HABS  HAER-1  HAER  NPS  STATE  
 COUNTY  LOCAL  OTHER

21. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Cultural Resource Report for Historical Resources: Project BRS 0149(7), Sevenmile Bridge, Southwest of Greeley, March 1981. Colorado Department of Highways, Denver, Colorado.

22. ENTITLED BY  
Rebecca Herbst

AFFILIATION  
Colorado Department of Highways

DATE  
11 October 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

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1. SITE I.D. NO.

2. NAME(S) OF STRUCTURE Brown's Park Bridge; Swinging Bridge Bridge over Green River CDH: M0F83-02.90	3. SITE ADDRESS (STREET & NO.) County Road 83 over Green River 47.1 miles northwest of Sunbeam NE $\frac{1}{4}$ S13, T10N, R10E	4. CITY/VICINITY Sunbeam vicinity	5. ORIGINAL USE roadway bridge	6. PRESENT USE roadway bridge	7. CLASSIFICATION BT&A: SUSP: STEEL	8. UTM ZONE B	9. RATING 10. DATE 1928 1953
MF19	COUNTY Moffat	STATE Colorado	STATE Colorado	SCALE 1:24 OTHER	EASTING	NORTHING	11. REGION RMRO
12. OWNER/ADMIN ADDRESS Moffat County Courthouse 221 West Victory Way Craig Colorado 81625							

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Steel/timber suspension bridge

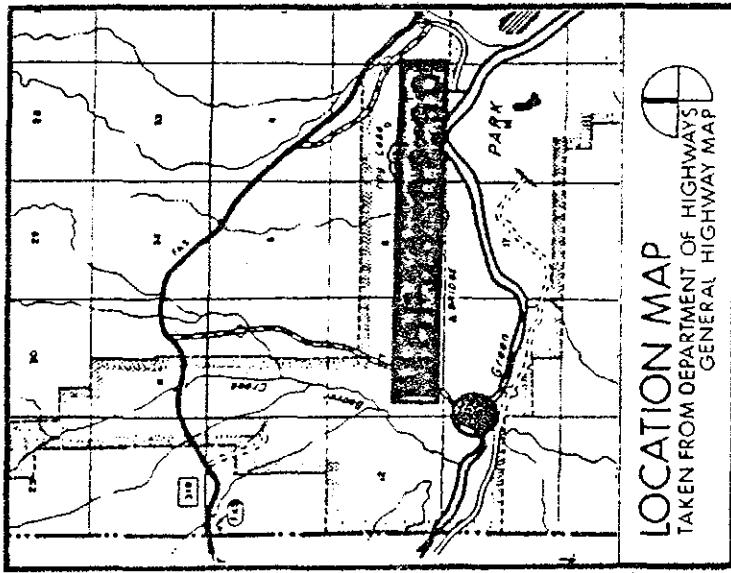
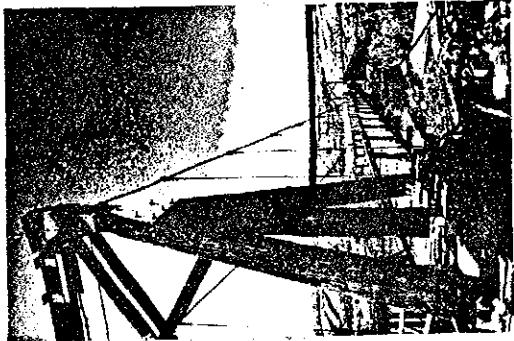
span number: 1  
 span length: 318' 0"  
 overall length: 320' 0"  
 roadway width: 8' 9"  
 overall height: 22' 11"  
 clearance hgt.: 10' 0"

main cables : 1-5/8" diameter spun galvanized steel wire  
 main towers : 2 diagonally braced timber towers w/ 11½" sq. timbers  
 flr./decking: timber decking and stringers over 7-3/4" diameter  
 steel pipe floor beams  
 substructure: concrete spread footings w/ retaining

Colorado Historic Bridge Survey (Page 173)  
HAER No. CO-30

Stanley Crouse began construction of the Brown's Park Bridge in 1927 and completed it early in 1928 with the help of neighbors. That year the unbraced, long-span suspension structure was inverted by high winds, causing failure of the chains and turnbuckles. It was rebuilt using salvaged parts of the original bridge, an action which was repeated periodically as the bridge underwent a 25-year process of trial and error repair and reconstruction. After another wind-caused collapse in 1950, the Bureau of Land Management in 1953 collected funds from several state, county and private sources, designed a new structure and contracted with the Utah Construction Company of Vernal, Utah, to rebuild the bridge for \$22,364. Completed in August 1954, this most recent version remains today.

14. CONDITION <input checked="" type="checkbox"/> EXCELLENT <input type="checkbox"/> FAIR <input type="checkbox"/> GOOD	15. DANGER OF DEMOLITION? (SPECIFY THREAT) <input type="checkbox"/> RUINS <input type="checkbox"/> DETERIORATED	16. SIGNIFICANCE An isolated crossing of the Green River, the Brown's Park Bridge now serves as access for hunters, ranchers and firefighters to a large tract of BLM-managed land. It is one of three known vehicular suspension bridges standing in Colorado (others: FR58, Royal Gorge Bridge and ME11, Bridgeport Bridge) and with an initial construction date of 1928, is the oldest of the three. Its age is problematical however, because of the frequent failures and reconstructions. Unaltered since 1954, it is the better-preserved of the two timber-towered suspension spans in the state: an interesting structure built locally using empirical design and frequently rebuilt because of the design's inherent flaws.
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17. PHOTOS AND SKETCH MAP OF LOCATION

18 LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> NA	<input type="checkbox"/> NHL	<input type="checkbox"/> HABS	<input type="checkbox"/> HAER	<input type="checkbox"/> NPS	<input type="checkbox"/> STATE
20. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER	<input type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN	<input type="checkbox"/> COUNTY	<input type="checkbox"/> LOCAL	<input type="checkbox"/> OTHER			

Structure Inventory and Appraisal: MOF83-02-90. Colorado Department of Highways, Denver Colorado.

Robert Gilroy, Moffat County Road Supervisor. Oral interview with Clayton Fraser, 23 July 1984.

Field inspection by Clayton Fraser and Susan Cason, 15 July 1984.

"Final Project Report: Brown's Park Bridge," unpublished report by Bureau of Land Management, n.d.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE  
20 July 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO			
2. NAME/STRUCTURE	0U02	5. ORIGINAL USE	7. CLASSIFICATION
Dallas Bridge Bridge over Uncompahgre River CDH: OUR24-0-1-7	roadway bridge	BT&A: TRUSS: STEEL	7 6 0 3
3. SITE ADDRESS (STREET & NO)	6. PRESENT USE		
County Road 24 over Uncompahgre River 2.3 miles north of Ridgway NE $\frac{1}{4}$ S4, T45N, R8W	roadway bridge	8. UTM ZONE	NORTHING
		1 3	2 5 9 5 4 5 4 2 9 6 0 5
4. CITY/VICINITY	COUNTY	STATE	11. REGION
Ridgway vicinity	Ouray	Colorado	RMRO
12. OWNER/ADMIN ADDRESS	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.		
Ouray County	OURAY COUNTY COURTHOUSE	541 4th Street	OURAY COLORADO B1427

Pin-connected, 4-panel steel Pratt pony truss

span number: 1  
span length: 70'0"  
overall length: 71'0"  
roadway width : 13'9"

end/top chrd: 2 channels w/ cover plate and lacing  
bottom chord: 2 rectangular eyebars  
vertical: 4 angles w/ lacing  
diagonal: 2 rectangular eyebars; 1 round eyebar w/ turnbuckle  
flr./decking: timber decking and stringers w/ steel floor beams  
substructure: steel pile bents w/ timber wingwalls

In July 1900 the Ouray County Board of Commissioners requested from several bridge companies the cost of a 7'1"x14' steel bridge, to be put up on the former town of Sneffels Road near the stop.

Bids were received the following month from the Missouri Valley Bridge and Iron Company of Leavenworth, Kansas, the Pittsburgh Bridge Company and the Pueblo Bridge Company of Pueblo, Colorado. With a bid of \$797.50 f.o.b. Ouray, Pueblo Bridge was awarded the contract for the superstructure. The bridge was delivered in September and erected by local labor, and by the first of November it was completed. This medium-span pinned Pratt pony truss has remained in continuous use since, unaltered and in fair condition.

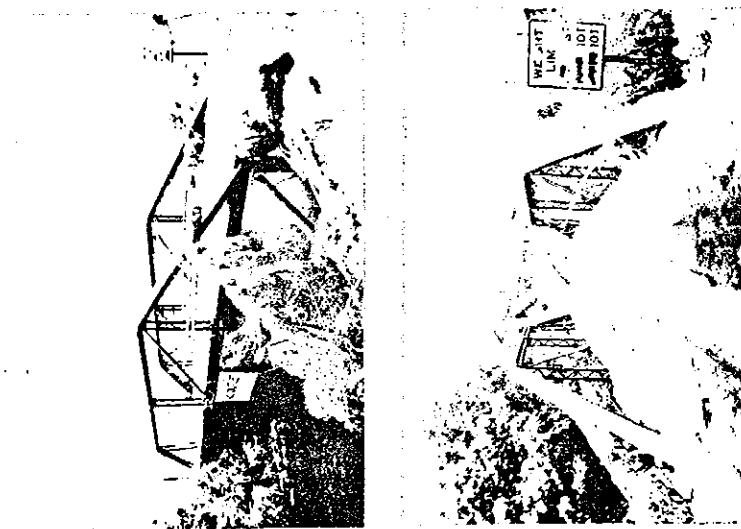
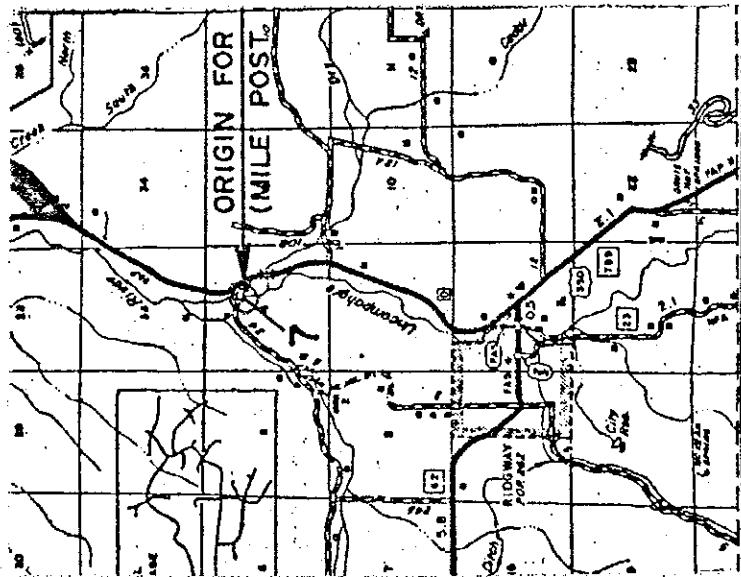
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUNS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> UNKNOWN
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16. SIGNIFICANCE

The Dallas Bridge is a typically configured early example of vehicular truss type common in Colorado. It is somewhat notable as one of the earliest bridges produced by the Pueblo Bridge Company after that firm's name was changed from the Bullen Bridge Company and is one of the few steel trusses in the survey documented as being delivered in pieces by the bridge company and erected using local labor.

Colorado Historic Bridge Survey (Page 176)  
HAER No. CO-30

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN

20. EXISTING SURVEY  NR  NPS  HABS  HAER  HAER-1  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

**Structure Inventory and Appraisal: OUR24-0.1-7. Colorado Department of Highways, Denver Colorado.**

Ouray County Commissioners' Minutes: 18 July 1900 (Book 4, page 380), 7 August 1900 (Book 4, page 391), 10 September 1900 (Book 4, page 404), 1 November 1900 (Book 4, page 414). Ouray County Courthouse, Ouray Colorado.

Dave Wolford, Ouray County Road Supervisor. Oral interview with Clayton Fraser, 17 January 1984.  
Field inspection by Clayton Fraser and Susan Cason. 18 November 1983.

22. INVENTORIED BY

AFFILIATION

Clayton Fraser and Carl Hallberg  
Fraserdesign Loveland Colorado

DATE

17 January 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE ID. NO.				5. ORIGINAL USE	7. CLASSIFICATION			9. RATING
Maroon Creek Bridge; Bridge No. 201A CDH: H-09-E	PI07	road railroad bridge	BT&A: BEAM: STEEL	7	5	8	4	
3. SITE ADDRESS (STREET & NO.) State Highway 82 over Maroon Creek 1.2 miles west of Aspen NW <sub>1/4</sub> S12, T10S, R85W	6. PRESENT USE roadway bridge			10. DATE 1888				
4. CITY/VICINITY Aspen vicinity	COUNTY Pitkin	STATE Colorado	8. UTM ZONE 1	EASTING 3	NORTHING 3	QUAD NAME Aspen	11. REGION RMRO	
12. OWNER/ADMIN ADDRESS Colorado Department of Highways	4201 East Arkansas Avenue	Denver Colorado 80222	SCALE 1:24	1:25				
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.								

## Multi-span trestle with built-up steel deck girder

span number: 20  
 span length: 30' 0"  
 overall length: 651' 0"  
 roadway width : 40' 0"  
 tallest tower : 91' 10"

flr./decking: concrete over corrugated steel deck w/ steel floor beams  
 substructure: stone/concrete spread footings and retaining abutments  
 trestles : 9 riveted steel towers w/ laced channel horizontal's  
 and verticals and round eyebar tension rod diagonals

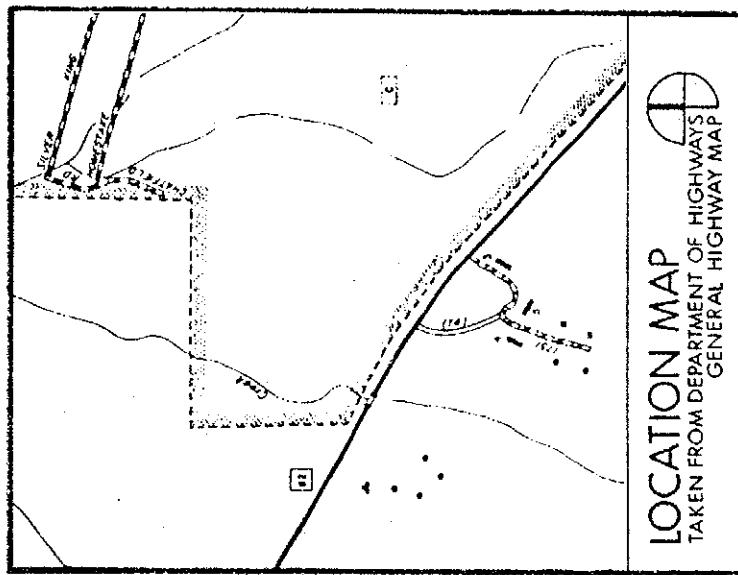
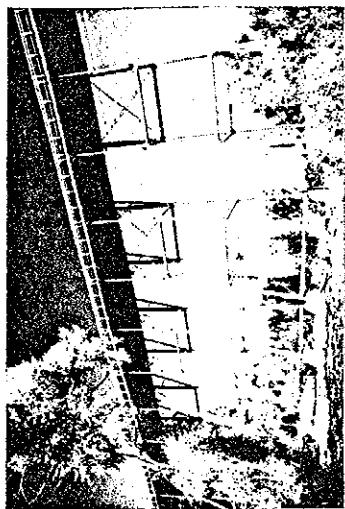
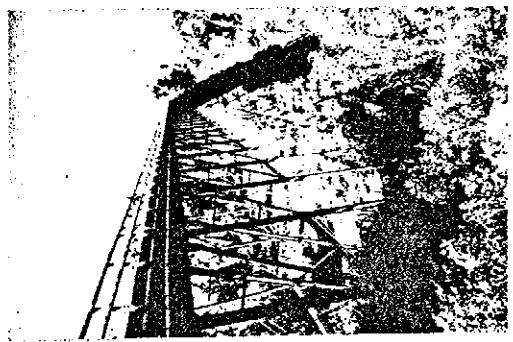
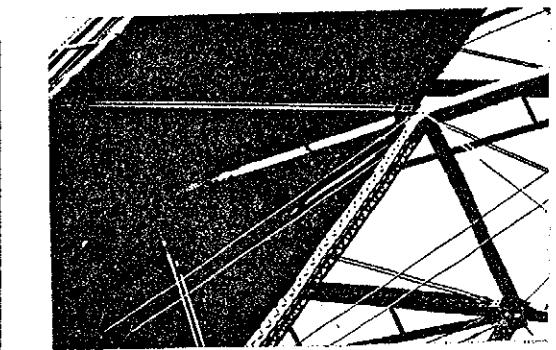
In 1887 the Colorado Midland Railroad raced with the Denver and Rio Grande to be the first to extend rail lines into the mining town of Aspen. The latter reached the town in mid-October, and the former reached the Maroon Creek crossing just to the west of town in December. There the Midland hit a snag, as steel for the superstructure of the immense Maroon Creek trestle was delayed from the fabricator in the east. When it did arrive later that month, the railroad bridge crew began construction, completing it early in February 1888. The bridge remained in use by the railroad until it quit operations in 1919. In 1929, after ten years of improvised use by motorists, the State Highway Department contracted with the Phelps Brothers and the Morrison-Knudsen Company to widen and pave the roadway. The Maroon Creek Bridge has functioned in place as a vehicular bridge since, unaltered and in good condition.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN
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## 16. SIGNIFICANCE

Of the five original steel bridges built by the Midland Railroad, in Manitou Springs and near Buena Vista and Aspen, only the Maroon Creek Bridge remains. The older and longer of the two railroad trestles converted in-place to roadway use (the other: Bridge No. 10 of the Florence and Cripple Creek Railroad, FR48) in the survey, it is a significant resource - one of the last remaining iron/steel multiple-span high trestles erected in the 19th century for Colorado's narrow gauge mountain railroads.

Colorado Historic Bridge Survey (Page 178)  
HAER No. CO-30



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY:  YES, LIMITED  YES, UNLIMITED  NO  UNKNOWN

20. EXISTING SURVEY:  NR  NHL  HAHS  HAER-1  HAER  NPS  STATE  
 COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: H-09-E. Colorado Department of Highways, Denver Colorado.

Edward M. McFarland. The Midland Route: A Colorado Midland Guide and Field Book, Boulder: Pruett Publishing Company, 1980. page 17.

Edward M. McFarland. Oral interview with Clayton Fraser, 1 March 1984.

Field inspection by Clayton Fraser and Carl Hallberg, 5 October 1983.

Colorado Historic Sites Inventory: Maroon Creek Bridge, 49/03/0046. Colorado State Historical Society, Denver Colorado.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE

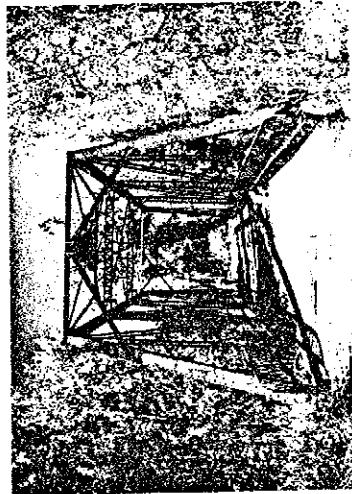
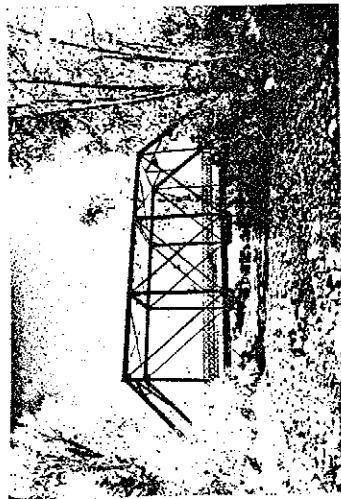
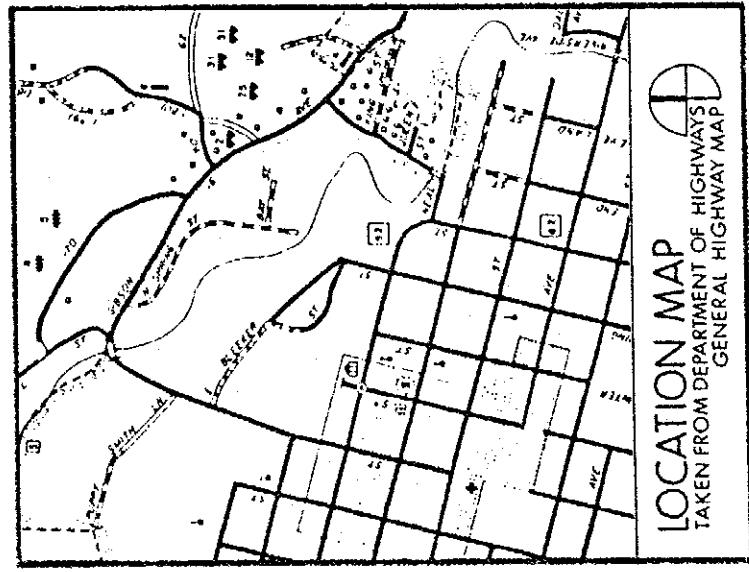
1 March 1984

## HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO			5. ORIGINAL USE	6. PRESENT USE	7. CLASSIFICATION	8. UTM ZONE	9. EASTING	10. DATE	11. REGION
2. NAME(S) OF STRUCTURE	Sheely Bridge		roadway bridge	roadway bridge	BT&A: TRUSS: STEEL	1	7	6	3
3. SITE ADDRESS (STREET & NO)	Carbondale Bridge (before move)								1911
4. CITY/VICINITY	Mill Street Park over Roaring Fork River		Pitkin County	Colorado	STATE	1:24	162.5	QUAD NAME	RMR0
12. OWNER/ADMIN ADDRESS	Pitkin County		Pitkin County Courthouse	East Main and South Galena	Aspen Colorado				
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.									
<p><b>Rigid-connected, 5-panel steel Pratt through truss</b></p> <p>span number: 1</p> <p>span length: 85'0"</p> <p>overall length: 87'0"</p> <p>overall height: 20'6"</p> <p>clearance hgt.: 17'0"</p> <p>roadway width : 15'3"</p> <p>end/top chrd: 2 channels w/ cover plate and lacing</p> <p>bottom chord: 4 angles w/ continuous plate</p> <p>vertical: 2 angles w/ spacers; 2 channels w/ lacing</p> <p>diagonal: 2 angles w/ spacers</p> <p>fir./decking: timber decking w/ steel stringers and floor beams</p> <p>substructure: concrete wingwalls</p> <p>By early 1911 the bridge at Carbondale over the Roaring Fork River, built in the 1890s, had been allowed to deteriorate beyond repair, and the Garfield County commissioners termed it "entirely unfit for travel". Declaring an emergency in February, they contracted with Charles G. Sheely of Denver to erect a 120' steel through truss of his design on poured concrete abutments for \$6300. The bridge was completed and accepted in May 1911. Around 1966 it was shortened by two panels and moved upstream to its present location in Aspen. There it serves as a pedestrian bridge in Mill Street Park.</p>									
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN
16. SIGNIFICANCE	A locally important roadway crossing of the Roaring Fork River - one of several between Glenwood Springs and Aspen, the Carbondale Bridge is significant as the earliest remaining riveted Pratt through truss and one of the earliest riveted trusses in Colorado and as one of few bridges left that was erected by Sheely, an important early bridge contractor. Moved, repaired and used as a pedestrian span, it is perhaps the most successful recent adaptive reuse in the survey.								

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN  
 NO

20. EXISTING SURVEYS  N.R.  COUNTY  STATE  
 N.H.L.  LOCAL  OTHER  
 HABS  H.A.E.R.  N.P.S.

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  
Garfield County Commissioners' Minutes: 5 July 1899 (Book C, page 9), 5 April 1902 (Book C, page 202), 6 February 1911 (Book D, pages 40-41), 5 April 1911 (Book D, page 48), 5 May 1911 (Book D, page 51), 7 February 1912 (Book D, page 90). Garfield County Courthouse, Glenwood Springs Colorado.

Ronald Thompson, Assistant Pitkin County Engineer. Oral interview with Clayton Fraser, 5 October 1983.

Builder's plate on portal: "1911 Built by Chas. G. Sheely Denver, Colorado. Commissioners James Brennan, Chmn H.O. Switzer, G.K. Oiffendarfer W.H. Trumtor, Consulting Engineer". Field inspection by Clayton Fraser and Carl Hallberg. 5 October 1983.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign

DATE  
Loveland Colorado  
24 November 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO									
2. NAME(S) OF STRUCTURE Douglas Crossing Bridge Bridge over Two Butte Creek CDH: PR28-27-10.4-88		PROG Roadway bridge		5. ORIGINAL USE Roadway bridge		7. CLASSIFICATION BT&A: ARCH: STONE		9. RATING 7 5 9 3	
3. SITE ADDRESS (STREET & NO) County Road 28 over Two Butte Creek 19.5 miles southeast of Granada SE $\frac{1}{4}$ S9, T26S, R43W		6. PRESENT USE Roadway bridge		8. UTM ZONE 1 3		EASTING 7 4 1 6 6 0 4 1 8 6 4 5 0		10. DATE 1936	
4. CITY/VICINITY Prowers County Granada vicinity		COUNTY Prowers		STATE Colorado		SCALE 1:24 1:625		11. REGION NAME N. Plum Creek SE RMRO	
12. OWNER/ADMIN ADDRESS Prowers County Courthouse		PO Box 889		13. DESCRIPTION AND BACKGROUND HISTORY (INCLUDING CONSTRUCTION DATES), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPROVEMENTS, ARCHITECTS, ENGINEERS, ETC.		Lamar Colorado 81052			

14. CONDITION  
 EXCELLENT       GOOD       FAIR       DETERIORATED       RUINS

15. DANGER OF DEMOLITION?  YES       NO       UNKNOWN  
(SPECIFY THREAT)

16. SIGNIFICANCE

span number: 6  
span length: 14'0"  
overall length: 154'0"  
roadway width : 27'6"

Semicircular, stone ashlar filled arch

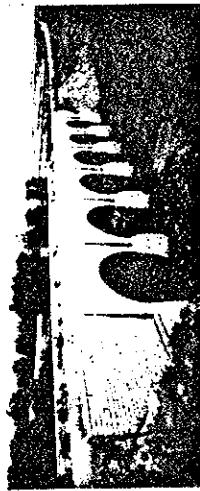
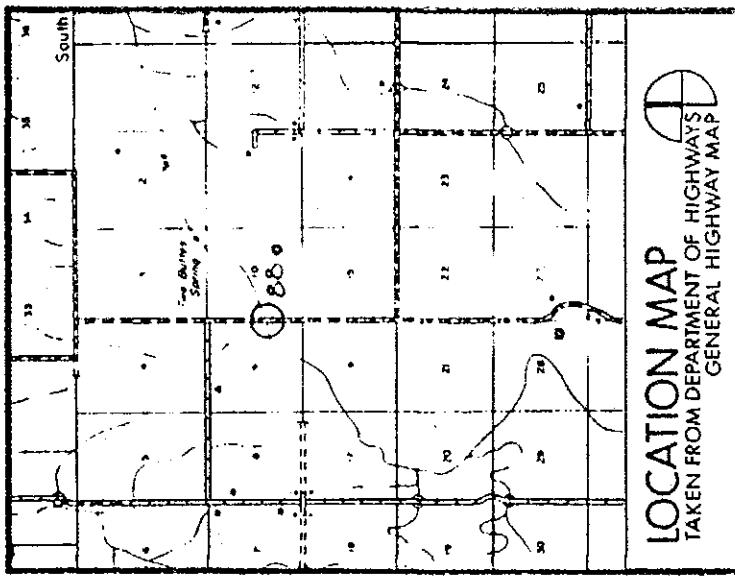
- flr./decking: asphalt over earth fill
- substructure: concrete foundations with battered stone piers and abutments
- guardrails : solid stone parapet w/ corbelled stone guardrail and belt course at roadway level

Colorado Historic Bridge Survey (Page 181)  
HAER No. CO-30

The Douglas Crossing Bridge over Two Butte Creek is one of four masonry arch bridges sponsored by the Prowers County Board of Commissioners in the late 1930s. This bridge, built in 1936 by an eight-man Works Progress Administration (WPA) crew, cost almost \$20,000 and contains twelve hundred perch of stone hauled by teams from the quarry. It is faced with rusticated stone, a trademark of WPA-built structures in southeast Colorado, and features battered stone piers and corbeled copings, beltcourses, abutment foundations and pilasters. The voussoirs of the six semicircular arches are comprised of alternating narrow and wide stones; "WPA" and "1936" are cast in raised letters on the concrete block bulkheads on the abutments. The bridge remains unaltered, and with a sufficiency rating of 96.9, it is still a substantial structure which serves as an important rural crossing for the adjacent agricultural community.

Among the thirty coursed stone roadway bridges built by WPA forces in southeast Colorado in the 1930s, most are low-profile, short-span structures, built with two to four arches in series to span minor creeks and draws. The Douglas Crossing Bridge is a notable exception. With its six 14'-span semicircular arches springing from battered piers, it features the greatest number of spans and the greatest overall length of the WPA bridges in the survey. Typically well-crafted and in pristine condition and setting, it is the most substantial and handsome bridge in the group - a locally important crossing and a significant example of technologically archaic bridge construction built by one of Roosevelt's relief agencies during the Depression.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NAME _____	20. EXISTING SURVEYS <input type="checkbox"/> NR <input type="checkbox"/> NHL <input type="checkbox"/> HABS <input type="checkbox"/> HAER-I <input type="checkbox"/> HAER <input type="checkbox"/> NPS <input type="checkbox"/> STATE LOCAL <input type="checkbox"/> OTHER
19. PUBLIC ACCESSIBILITY <input type="checkbox"/> YES, UNLIMITED <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> NO	21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: PR28-27-10.4-88. Colorado Department of Highways, Denver Colorado.

"A Job that Made Men Proud." The W.P.A. Worker, I (June 1936): page 19.

Highway Planning Survey photograph, 16 May 1936. Colorado Department of Highways, Denver Colorado.

Field inspection by Clayton Fraser and Carl Hallberg, 8 September 1983.

22. INVENTORIED BY Clayton Fraser and Carl Hallberg	AFFILIATION Fraserdesign	DATE 26 September 1983
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# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240



1. SITE I.D. NO.

2. NAME(S) OF STRUCTURE

Nepesta Bridge  
Bridge over Arkansas River  
PUCO 0.98-601F

3. SITE ADDRESS (STREET & NO.)

County Road 613 over Arkansas River  
8.0 miles southeast of Boone  
NE $\frac{1}{4}$  S32, T21S, R60W

4. CITY/VICINITY

Pueblo  
Boone vicinity  
Pueblo County

5. ORIGINAL USE

Roadway bridge

6. PRESENT USE

Roadway bridge

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Pin-connected, 6-panel steel Pratt through truss  
Pueblo County Courthouse 211 West 10th Street Pueblo Colorado B1003

span number: 2  
span length: 106' 0"  
overall length: 2B3' 0"  
overall height: 17'10"  
clearance hgt.: 13' 0"  
roadway width : 15'10"

end/top chrd: 2 channels w/ cover and batten plates  
bottom chord: 2 rectangular eyebars  
vertical: 2 channels w/ lacing; 2 angles w/ lacing  
diagonal: 2 rectangular eyebars; 1 round eyebar w/ turnbuckle  
flr./decking: asphalt over timber deck w/ timber stringers  
substructure: steel-cased concrete piers w/ concrete wingwalls

By early November 1905 the existing bridge over the Arkansas River on the Santa Fe Trail near Nepesta had been allowed to deteriorate to the point that it needed replacement. The Pueblo County Board of Commissioners delegated the responsibility to the Road and Bridge Committee, which in turn contracted with the Pueblo Bridge Company to erect the new bridge. Using steel components rolled by the Cambria Steel Works, Pueblo Bridge completed this two-span Pratt through truss early the next year. The Nepesta Bridge has functioned in place since, surviving the horrendous flood of the Arkansas in June 1921. With the rerouting of the highway into U.S. 50, it has been relegated to county road status and remains in unaltered and well-maintained condition.

14. CONDITION

EXCELLENT

FAIR

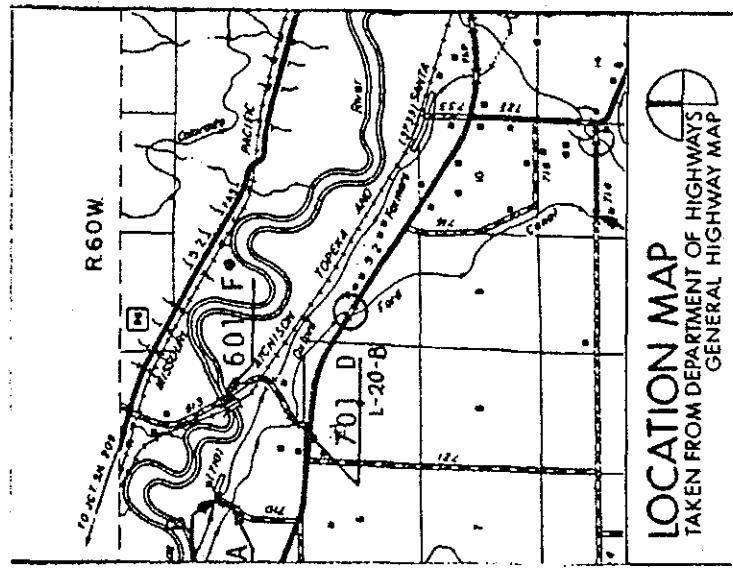
DETERIORATED

15. DANGER OF DEMOLITION?  YES  NO  UNKNOWN

16. SIGNIFICANCE

The only roadway truss left in Pueblo County over the Arkansas after the 1921 flood, the Nepesta Bridge has served as a regionally important crossing on the major east-west artery in southeast Colorado for decades. It is a typically configured and structurally unaltered example of the early mainstay truss type: the pin-connected Pratt through truss. Placed in a rural setting beside a through girder of the Atchison Topeka and Santa Fe Railway, it is an important early vehicular bridge.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> NO
20. EXISTING SURVEYS		
	<input type="checkbox"/> NPS	<input type="checkbox"/> NHL
	<input type="checkbox"/> COUNTY	<input type="checkbox"/> HABS
	<input type="checkbox"/> LOCAL	<input type="checkbox"/> HAER
	<input type="checkbox"/> OTHER	<input type="checkbox"/> NPS
21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER		

Structure Inventory and Appraisal: PUCO 0.98-601F. Colorado Department of Highways, Denver Colorado.  
Pueblo County Commissioners' Minutes: 10 November 1905 (Book 14, page 397). Pueblo County Courthouse, Pueblo Colorado.

Builder's plate on bridge portal: "1905 Built by Pueblo Bridge Co. Pueblo, Colo."

Ralph C. Taylor. "Pueblo Completes Bridge Program," Colorado Highways, Vol. 4, Number 4 (April 1925), pages 4-5.  
Field inspection by Clayton Fraser and Carl Hallberg, 6 September 1983.

22. INVENTORIED BY Clayton Fraser and Carl Hallberg

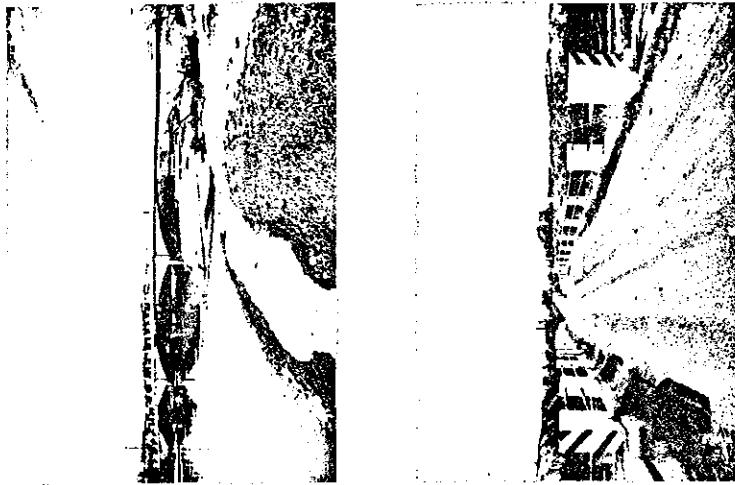
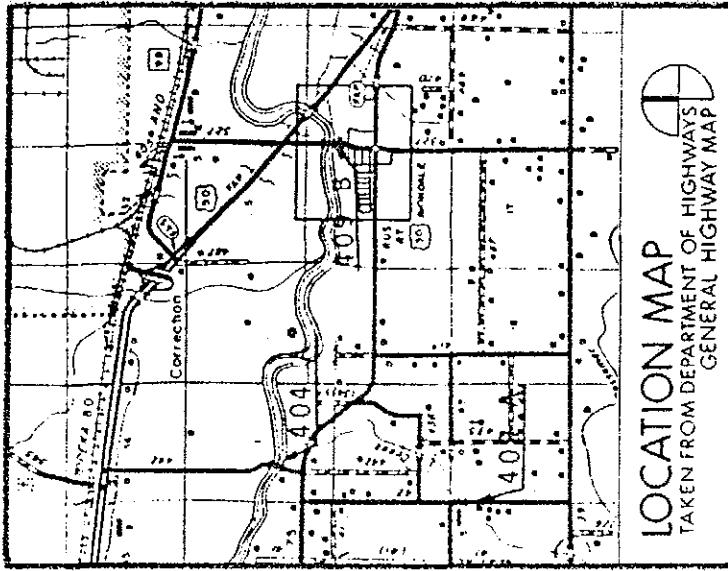
AFFILIATION  
Fraserdesign

DATE  
8 February 1984

# HABS/HAER INVENTORY

1. SITE I.D. NO.												
2. NAME(S) OF STRUCTURE	Avondale Bridge Bridge over Arkansas River PUCO 0.42-409B											
3. SITE ADDRESS (STREET & NO.)	County Road 327 over Arkansas River 0.3 mile north of Avondale NW <sup>1/4</sup> S9, T21S, R62W											
4. CITY/VICINITY	Avondale		Pueblo County		Pueblo County Courthouse		211 West 10th Street		Pueblo Colorado 81003			
5. ORIGINAL USE	PU09		roadway bridge		6. PRESENT USE		roadway bridge		7. CLASSIFICATION			
7. CLASSIFICATION	BT&A: ARCH: REINFORCED CONCRETE		7		5		9		5		9. RATING	
8. UTM ZONE	1		3		5		5		7		10. DATE	
SCALE	1:24		1:32.5		1:62.5		1:124		1:62.5		1913	
STATE	Colorado		Colorado		Colorado		Colorado		Colorado		RMRO	
COUNTY	Pueblo		Pueblo		Pueblo		Pueblo		Pueblo		RMRO	
12. OWNER/ADMIN ADDRESS	Avondale											
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	<p><b>Segmental, reinforced concrete Luten arch</b></p> <p>span number: 3      flr./decking: asphalt over earth fill; roadway arched</p> <p>span length: 8g'3" (center); 83'0" (others) substrate: buttressed concrete piers w/concrete wingwall abutments</p> <p>overall length: 257'4" guradrails : steel pipes between concrete bulkheads</p> <p>roadway width: 1g'8"</p>											
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	<input type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN	15. DANGER OF DEMOLITION? (SPECIFY THREAT)				
16. SIGNIFICANCE	Built by Colorado's most prolific concrete roadway arch contractor, the Avondale Bridge is one of the few spans over the Arkansas River in Pueblo County which withstood the heavy spring flood of 1921. It is handsomely proportioned with the three long segmental spans and arched roadway - a representative example of early concrete vehicular bridge construction, well-preserved and structurally sound.											

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN

20. EXISTING SURVEY?  NR  COUNTY  STATE

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  
**Structure Inventory and Appraisal:** PUCD 0.42-409B. Colorado Department of Highways, Denver Colorado.

Pueblo County Commissioners' Minutes: 14 November 1912 (Book 18, page 87), 25 November 1912 (Book 18, page 106), 2 December 1912 (Book 18, page 107), 23 December 1912 (Book 18, pages 120-21), 23 June 1913 (Book 18, page 271). Pueblo County Courthouse, Pueblo Colorado.

Builder's plate on bridge: "1913 The Pueblo Bridge Co. Fred H. Bullen - President H.L. Hollister - Secretary Pueblo County Commissioners: C.S. Glascoe, R.H. Higgings, J.W. Thomson". Field inspection by Clayton Fraser and Susan Cason, 3 February 1984.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign Loveland Colorado

DATE  
8 February 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

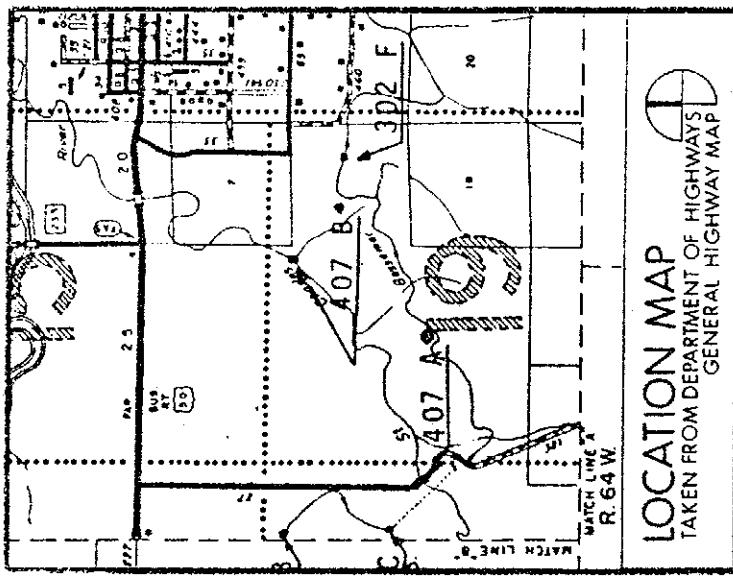
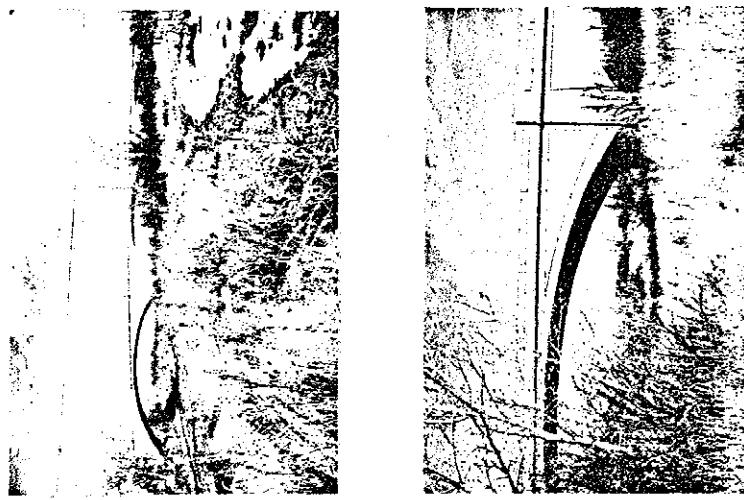


1. SITE I.D. NO.

2. NAME(S) OF STRUCTURE <b>St. Charles Bridge Bridge over St. Charles River</b>	3. SITE ADDRESS (STREET & NO.) County Road 65 over St. Charles River 6.8 miles Southeast of Pueblo SE $\frac{1}{2}$ S12, T21S, R64W	4. CITY/VICINITY <b>Pueblo vicinity</b>	5. ORIGINAL USE roadway bridge	6. PRESENT USE roadway bridge	7. CLASSIFICATION <b>BT&amp;A: ARCH: REINFORCED CONCRETE</b>	8. UTM ZONE 13	9. EASTING 5	10. NORTHING 3	11. REGION RMRO	12. OWNER/ADMIN ADDRESS <b>Pueblo County</b>
						12	1	4	0	<b>Pueblo Colorado 81003</b>
						24	5	2	8	
						25	3	0	0	
						162.5	9	0	0	
						OTHER	7	4	0	
							1	4	2	
							3	2	8	
							0	0	0	

13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	14. CONDITION <input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> GOOD <input type="checkbox"/> FAIR	15. DETERIORATED <input type="checkbox"/> DETERIORATED <input type="checkbox"/> RUINS	16. DANGER OF DEMOLITION? (SPECIFY THREAT) <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN
Segmental, reinforced concrete filled spandrel arch	span number: 3 span length: 91' 0" overall length: 275' 0" roadway width: 19' 10"	flr./decking: asphalt over earth fill; arched roadway substructure: buttressed concrete piers w/concrete wingwall abutments guardrails : solid concrete parapet walls w/ incised panels	After horrendous flooding in June 1921 destroyed most of the major roadway bridges in Pueblo County, the commissioners began a three-year bridgebuilding program to replace them. This bridge over the St. Charles River was one of those replacement spans. In late December 1923 bids were let for the bridge's construction. Proposals were received in January from Lee F. Williams, P.C. Croll, the Pueblo Bridge Company and the Salle Construction Company for either a steel or concrete structure. The contract was awarded to Pueblo-based Salle Construction Company for \$39,077, and excavation was started on February 16th. The contractors used a reinforced concrete vault system to excavate for the foundations, an unusual method which they later patented. Work on the superstructure began in April, and in late June the bridge was completed and opened to traffic. The St. Charles Bridge has functioned unaltered as a locally important vehicular span since and is in structurally and architecturally sound condition today.

16. SIGNIFICANCE  
The superstructure of the St. Charles Bridge is typically configured for a filled spandrel arch. It is distinguished somewhat as the longest-span filled arch still in public use in Colorado. The substructure is technologically notable in its use of a slipformed concrete coffer dam for foundation construction. As a well-proportioned and architecturally articulated long-span arch, built innovatively, the St. Charles is one of Colorado's more significant vehicular bridges.



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  YES, LIMITED  NO

20. EXISTING SURVEYS  NR  NHL  HAER-1  HAER  NPS  STATE  
 COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: PUCO 0.16-407B. Colorado Department of Highways, Denver Colorado.

Pueblo County Commissioners' Minutes: 24 December 1923 (Book 21, page 566), 7 January 1924 (Book 21, page 572), 14 January 1924 (Book 21, page 578), 22 May 1924 (Book 21, page 630), 23 June 1924 (Book 21, page 640). Pueblo County Courthouse, Pueblo Colorado.

"Bridge Builder Uses New Method," Colorado Highways, Vol. 3, Number 7 (July 1924). page 10.  
Builder's plate on bridge: "County Commissioners W.L. Rees, O.G. Smith, Hurb H. Wilson Built by Salle Cons. Co. 1924".

Field inspection by Clayton Fraser and Susan Cason, 3 February 1984.

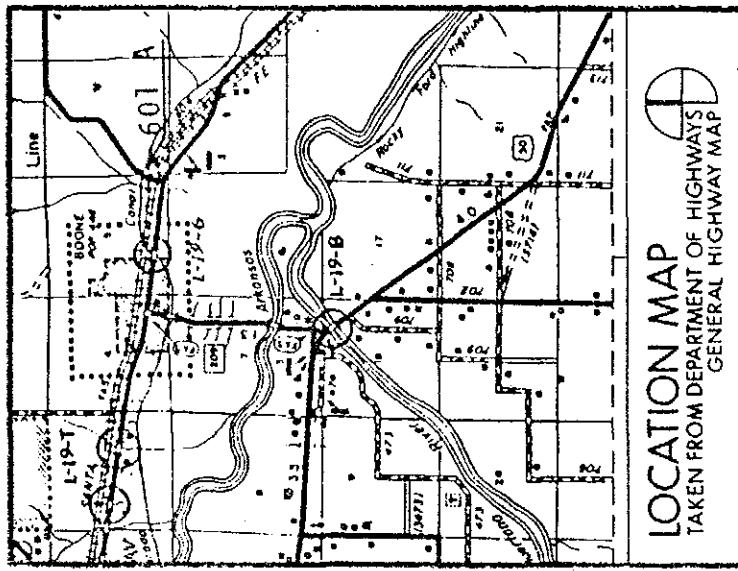
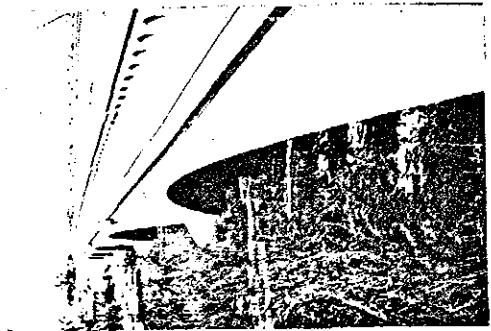
## HABS/HAER INVENTORY

1. SITE I.D. NO.			5. ORIGINAL USE	6. PRESENT USE	7. CLASSIFICATION	8. UTM ZONE	9. RATING
Huerfano Bridge Bridge over Huerfano River L-19-B	PU19		highway bridge	highway bridge	BT&A: ARCH: REINFORCED CONCRETE	1 3	7 5 9 5
3. SITE ADDRESS (STREET & NO. U.S. Highway 50 over Huerfano River 1.2 miles south of Boone NE <sup>4</sup> S18, T21S, R61W)	4. CITY/VICINITY Boone vicinity		STATE Colorado	SCALE 1:24 1:625 OTHER:	10. DATE 1921		
12. OWNER/ADMIN ADDRESS Colorado Department of Highways		4201 East Arkansas Avenue	Denver Colorado 80222	11. REGION RMRO			
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.							
Segmental, reinforced concrete filled spandrel arch							
span number: 5 span length: 80' 0" overall length: 480' 0" roadway width: 30' 0"							
flr./decking: asphalt over earth fill substructure: buttressed concrete piers w/concrete wingwall abutments guardrails : cast concrete doghouse guardrails							

span number: span length: overall length: roadway width :	5 80' 0" 480' 0" 30' 0"			
14. CONDITION	<input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> GOOD <input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT) <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN

By early 1920 the existing timber truss bridge over the Huerfano River on the Santa Fe Trail had deteriorated beyond repair. Two spans failed because they were "weakened by the drillings of woodpeckers at the hip joints." The Colorado Highway Department elected to replace the bridge, and staff engineer Robert Dubois designed this multi-span deck arch. The Pueblo Bridge Company was contracted to build the bridge for the state and move the timbers of the old trusses to another crossing for the county; construction continued through 1920 and into the spring of 1921. Although the bridge was unfinished in June, it was one of the only spans left in the county after heavy flooding washed the others away, and was put to use immediately. The work was completed later that year. With incised panels of bushhammered texture and tinted concrete, the bridge remains architecturally intact. A major crossing of the Santa Fe Trail (now U.S. 50), it remains structurally sound and is a substantial roadway structure.

The preferred alternative to the truss for short- and medium-span vehicular bridges was generally considered to be the concrete arch. More solid under traffic and better resistant to flooding, it was also valued as more aesthetically refined than the starkly functional truss. The Huerfano Bridge has weathered floods that destroyed almost all of the trusses in Pueblo County. Called "one of the finest examples of concrete construction in the state" at its completion, it is a substantial and architecturally well-detailed bridge. This crossing near the mouth of the Huerfano River is a pivotal one to southeast Colorado, and as such the Huerfano Bridge - the longest filled spandrel roadway arch remaining in the state - is a significant structure.



17. PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEYS			
<input type="checkbox"/> NR		<input type="checkbox"/> NHL	<input type="checkbox"/> HAER
<input type="checkbox"/> COUNTY		<input type="checkbox"/> LOCAL	<input type="checkbox"/> OTHER
21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: L-19-B. Colorado Department of Highways, Denver Colorado.  
Pueblo County Commissioners' Minutes: 24 May 1920 (Book 21, page 10), 2 June 1921 (Book 21, page 154). Pueblo County Courthouse, Pueblo Colorado.  
Robert Dubois. "Longest Concrete Bridge in Colorado," Colorado Highways, Vol. 1, Number 2 (May 1922), page 18.  
Builder's plate on bridge: "Colorado State Highway Department Builder Pueblo Bridge & Construction Co. 1920-21".  
Field inspection by Clayton Fraser and Susan Cason, 3 February 1984.

22. INVENTORIED BY	Clayton Fraser and Carl Hallberg	AFFILIATION	Fraserdesign Loveland Colorado	DATE	8 February 1984
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# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

## 1. SITE I.D. NO



## 2. NAMES OF STRUCTURE

Hay's Ranch Bridge; State Bridge  
Bridge over White River  
CDH: R10B-127-00.40

## 3. SITE ADDRESS (STREET & NO)

County Road 127 over White River  
9.8 miles west of Meeker  
NE $\frac{1}{4}$  S31, T1N, R95W

## 4. CITY/VICINITY

Meeker vicinity  
Rio Blanco County

## 5. ORIGINAL USE

Roadway

## 6. PRESENT USE

Roadway bridge

## 7. CLASSIFICATION

BT&A: STEEL: TRUSS

## 8. UTM ZONE

11

## 9. RATING

7 6 0 3

## 10. DATE

1900

## 11. REGION

RMRD

## 12. OWNER/ADMIN ADDRESS

Rio Blanco County Courthouse  
6th and Main  
Meeker Colorado 81641

## 13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Pin-Connected, 6-panel steel Pratt pony truss  
  
span number: 1  
span length: 92' 0"  
overall length: 93' 0"  
roadway width : 13'11"

end/top chrd: 2 channels w/ cover plate and lacing  
bottom chord: 2 rectangular eyebars  
vertical: 2 channels w/ lacing  
diagonal: 2 rectangular eyebars; 1 square eyebar w/ turnbuckle  
flr./decking: earth over corrugated steel w/ steel stringers  
substructure: steel pile bents w/ timber wingwalls

Colorado Historic Bridge Survey (Page 191)  
HAER No. CO-30

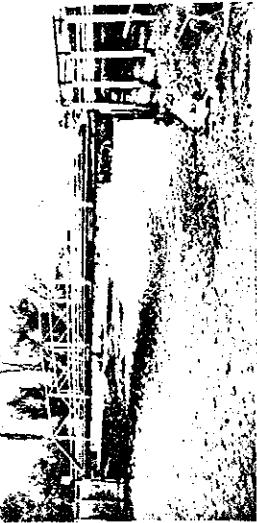
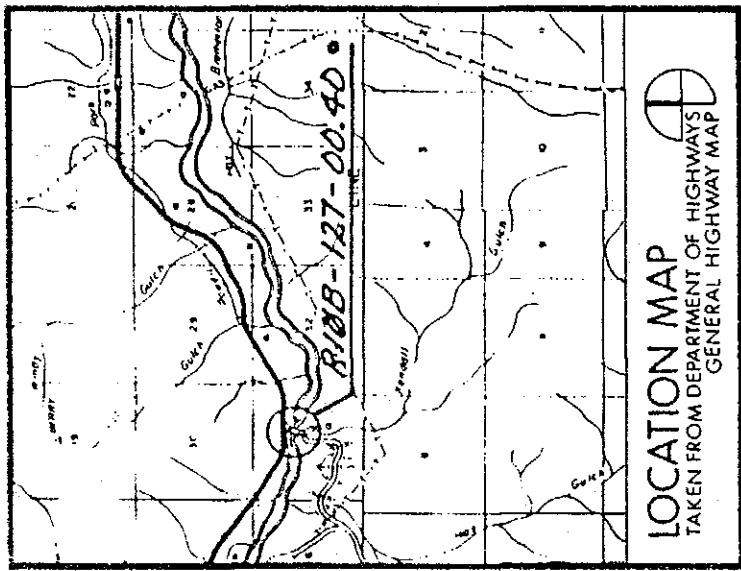
House Bill 144 of the Colorado State Legislature appropriated \$2000 for a bridge over the White River at Hay's Ranch ten miles below Meeker. Construction was delayed throughout 1900 by confusion regarding the proposed location for the crossing, but by the end of November that year proposals were received. The contract was awarded to the M.J. Patterson Contracting Company of Denver. Using steel forged by Lackawanna and Carnegie, Patterson completed this long-span Pratt pony truss early the next year. The bridge features a slightly bowed top chord, unlike the typical parallel-chorded pony trusses of the period. It has more recently been reinforced by three steel girders placed beneath the floor beams - a rehabilitation measure which is visible only from below.

14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT?)
						<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN

## 16. SIGNIFICANCE

Once an important regional crossing of the White River, the State Bridge at Hay's Ranch is historically significant as the oldest remaining state-funded vehicular bridge and, together with the Four Mile Bridge (R003) in Routt County, the oldest roadway truss in northwestern Colorado. Technologically, the bridge's slightly bowed top chord distinguishes it as a peculiar variation of the Pratt pony truss. Through its recent structural reinforcement, the Hay's Ranch Bridge is a substantial structure - the longest-span of the early pin-connected pony trusses in the survey and one of the state's more significant bridges.

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, UNLIMITED  YES, LIMITED  UNKNOWN

20. EXISTING SURVEY  NR  NHSL  HABS  HAER-1  HAER  NPS  STATE

COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Structure Inventory and Appraisal: RIOB-127-00.40. Colorado Department of Highways, Denver Colorado.  
10th Biennial Report of the State Engineer, Colorado: 1899-1900. Denver Colorado: Smith-Brooks Printing Company, 1901. p. 30.

Field inspection by Clayton Fraser and Carl Hallberg, 19 October 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE

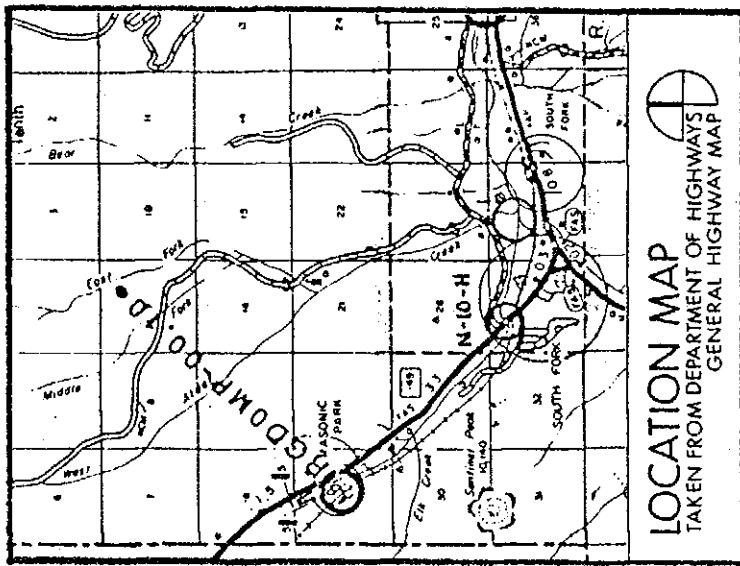
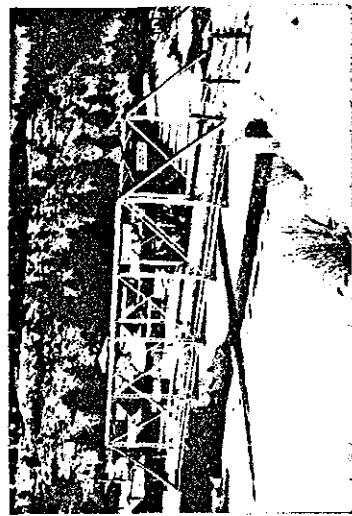
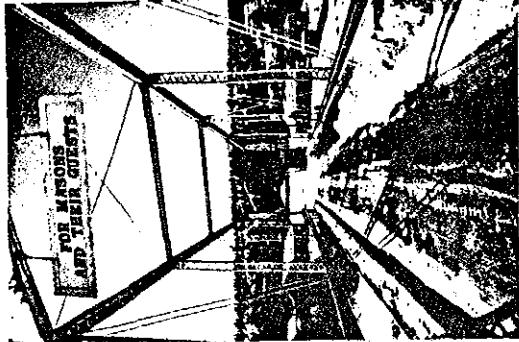
1 December 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO					
2. NAME(S) OF STRUCTURE Masonic Park Bridge Baxterville Bridge (before move)	RG03	5. ORIGINAL USE highway bridge	7. CLASSIFICATION BT&A: TRUSS: STEEL		
CDH: RGDMp-00.10			7	6	0
3. SITE ADDRESS (STREET & NO) County Road MP over Rio Grande River 3.4 miles northwest of South Fork NE <sub>4</sub> S19, T40N, R3E	6. PRESENT USE roadway bridge				
4. CITY/VICINITY South Fork vicinity	COUNTY Rio Grande	STATE Colorado	8. UTM ZONE 1	9. EASTING 3	10. DATE 1909
12. OWNER/ADMIN ADDRESS Rio Grande County Courthouse	11. REGION RMRO				
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	12. CITY/VICINITY Del Norte and Cherry				

14. CONDITION <input type="checkbox"/> EXCELLENT <input checked="" type="checkbox"/> GOOD <input type="checkbox"/> FAIR	15. DETERIORATED <input type="checkbox"/>	16. SIGNIFICANCE The Baxterville Bridge is technologically significant as a pinned through truss with a skewed design. Skewed bridges - through trusses particularly - were more difficult to engineer and construct and as a result were an uncommon variation on standard design. Built by one of Colorado's most important bridge contractors, this medium-span pratt is the only one remaining in public use.
17. DANGER OF DEMOLITION? (SPECIFY THREAT) <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN	18. OTHER COMMENTS	



17. PHOTOS AND SKETCH MAP OF LOCATION

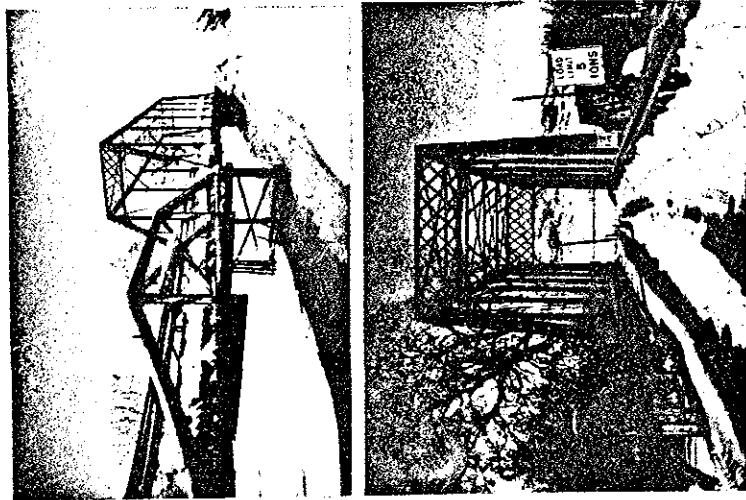
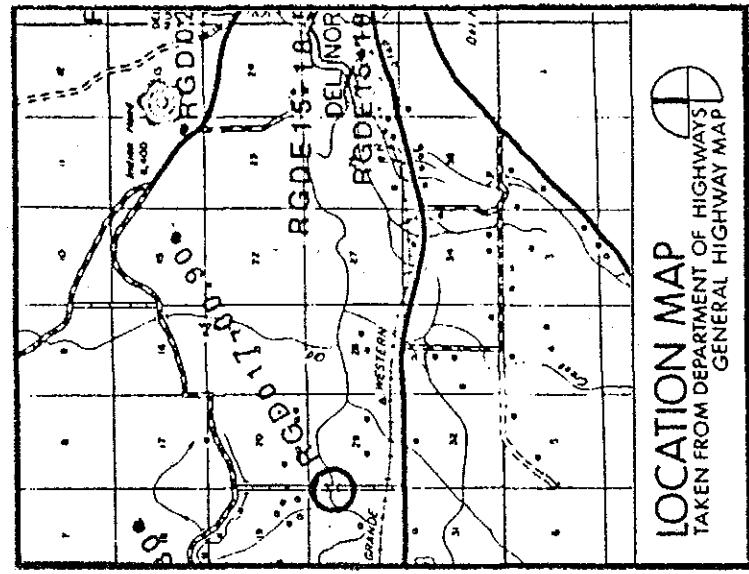
18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> UNKNOWN
20. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			
<input type="checkbox"/> NR <input type="checkbox"/> NHL <input type="checkbox"/> HABS <input type="checkbox"/> HAER-I <input type="checkbox"/> HAER <input type="checkbox"/> NPS <input type="checkbox"/> STATE <input type="checkbox"/> COUNTY <input type="checkbox"/> LOCAL			

Structure Inventory and Appraisal: RGDDMP-00.10. Colorado Department of Highways, Denver Colorado.  
Rio Grande County Commissioners' Minutes: 30 October 1912 (Book 5, page 464), 28 January 1913 (Book 5, page 478).  
Rio Grande County Courthouse, Del Norte Colorado.

Builder's plate on bridge portal: "1909 Pueblo Bridge Co. Builders Pueblo Colo.".  
Fred Oline, Rio Grande County Road Supervisor. Oral interview with Clayton Fraser, 9 January 1984.  
Field inspection by Clayton Fraser, 4 January 1984.



17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN  NO

20. EXISTING SURVEY  NPS  NHPL  COUNTY  LOCAL  HABS  HAER-1  HAER  OTHER  NPS  STATE

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

**Structure Inventory and Appraisal:** RGDO17-00.90. Colorado Department of Highways, Denver Colorado.  
**14th Biennial Report of the State Engineer, Colorado:** 1907-1908. Denver Colorado: Smith-Brooks Printing Company, 1909. page 131.

Vertical files of the State Engineer: Rio Grande County Bridge. Colorado Department of Highways, Denver Colorado.  
Fred Oline, Rio Grande County Road Supervisor. Oral interview with Clayton Fraser, 9 January 1984.  
Field inspection by Clayton Fraser, 4 January 1984.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE

12 January 1984

# HABS/HAER INVENTORY

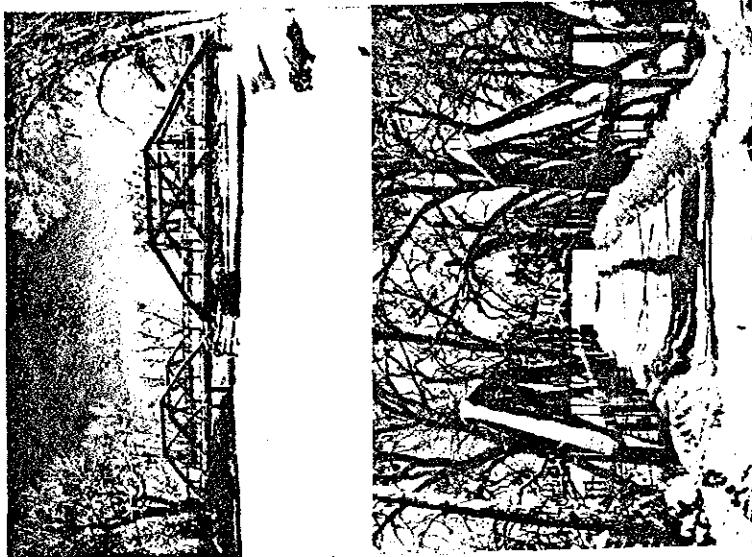
U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO			5. ORIGINAL USE	7. CLASSIFICATION		9. RATING
2. NAME(S) OF STRUCTURE	Wheeler Bridge		roadway bridge	BT&A: TRUSS: WOOD		7 6 0 0
Bridge over Rio Grande River		RG07				10. DATE 1924
3. SITE ADDRESS (STREET & NO)		Private road over Rio Grande River		6. PRESENT USE	Roadway bridge	
3.8 miles east of Oel Norte		NW $\frac{1}{4}$ S2, T39N, R6E				
4. CITY/VICINITY		Oel Norte vicinity		STATE	NORTHING	
12 OWNER/ADMIN ADDRESS		Raymond Poage		Colorado	8UTM ZONE 1 3	EASTING 3 8 6 3 2 0 4 1 6 8 4 5 0
				SCALE	1:24 1:625	QUAD NAME Del Norte
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATES, PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.		Del Norte Colorado 81132				
Rigid-connected, 3-panel timber/steel Howe pony truss		end/top chrd: 10x10 timber bottom chord: 10x10 timber vertical: round steel rod diagonal: 6x6 timber flr./decking: timber decking and stringers over 4x10 floor beams substrate: masonry abutments and log crib pier				
span number:		2				
span length:		55'0"				
overall length:		114'0"				
roadway width :		12'4"				
14. CONDITION		<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS
16. SIGNIFICANCE		15. DANGER OF DEMOLITION? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> UNKNOWN (SPECIFY THREAT)				

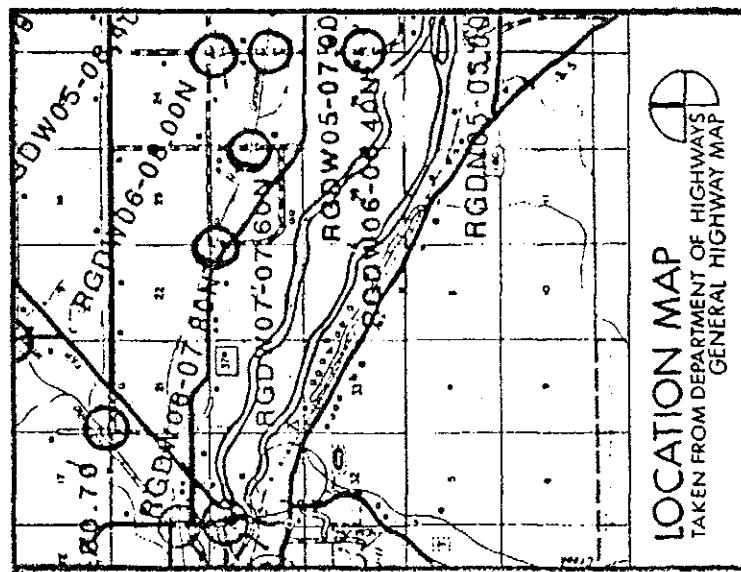
After heavy spring flooding washed the earlier bridge away, this two-span timber truss was erected in 1924 on the existing abutments to serve the Wheeler (now Poage) Ranch. It and its predecessor were patterned after the early timber/iron State Bridge over the Rio Grande near Wagon Wheel Gap - a two-span combination truss erected in 1899 by the Pueblo Bridge Company. This bridge features a classic Howe configuration, with diagonal compression members and vertical tension rods; it is well-crafted, with Roman numerals carved into the timbers for assembly and stone ashlar abutments. On a private ranch road, it carries light traffic and is today in fair condition, with some weathering and deterioration of the timbers.

The Howe pony truss was, with the king- and queenpost trusses, the most commonly erected early timber vehicular truss form. Once well-represented at crossings across Colorado, all but two known examples have been replaced (the other: RB13), and only one Howe through is still standing in the state (EA15). The longer and older of the two Howe ponyies, the Wheeler Bridge is a well-constructed and well-preserved late example of this archaic bridge form and is one of the last of what was once a common vehicular span type.

Colorado Historic Bridge Survey (Page 198)  
HAER No. CO-30



17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN  
 NO  
20. EXISTING SURVEYS  INR  NHI  HABS  HHER-1  HAER  NPS  STATE  
 COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Raymond Poage. Oral interview with Clayton Fraser, 15 March 1984. Poage owns the bridge and the ranch on which it is located.

Ralph Off. Oral interview with Clayton Fraser, 15 March 1984. Off owns the adjacent ranch.  
Fred Oline, Rio Grande County Road Supervisor. Oral interview with Clayton Fraser, 10 January 1984.  
Vertical files of the State Engineer. Colorado Department of Highways, Denver Colorado.  
Field inspection by Clayton Fraser, 4 January 1984.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE  
15 March 1984

# HABS/HAER INVENTORY

1. SITE I.D. NO.					
2. NAME(S) OF STRUCTURE	Sutherland Bridge Bridge over Rio Grande River				
3. SITE ADDRESS (STREET & NO.)	3.7 miles Southeast of Del Norte NW $\frac{1}{4}$ S2, T39N, R6E Private road over Rio Grande River				
4. CITY/VICINITY	Del Norte vicinity				
5. ORIGINAL USE	roadway bridge				
6. PRESENT USE	roadway bridge				
7. CLASSIFICATION	BT&A: TRUSS: WOOD				
8. UTM ZONE	1	3	EASTING	NORTHING	
9. RATING	7	6	0	0	
10. DATE	1924				
11. REGION	RMRO				

12. OWNER/ADMIN ADDRESS  
Samuel Holland      Del Norte Colorado 81132  
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.

Rigid-connected, 6-panel timber Warren pony truss w/ verticals at all panel points; log kingpost pony truss approach

span number: 2  
span length: 50' 0"  
overall length: 128' 0"  
roadway width: 10' 0"

end/top chrd: 2 4x12 timbers  
bottom chord: 2 4x12 timbers  
vertical: 8x8 timber  
diagonal: 8x10 timber  
flr./decking: timber decking and stringers w/ 6x12 floor beams  
substructure: concrete wingwalls w/ solid concrete piers

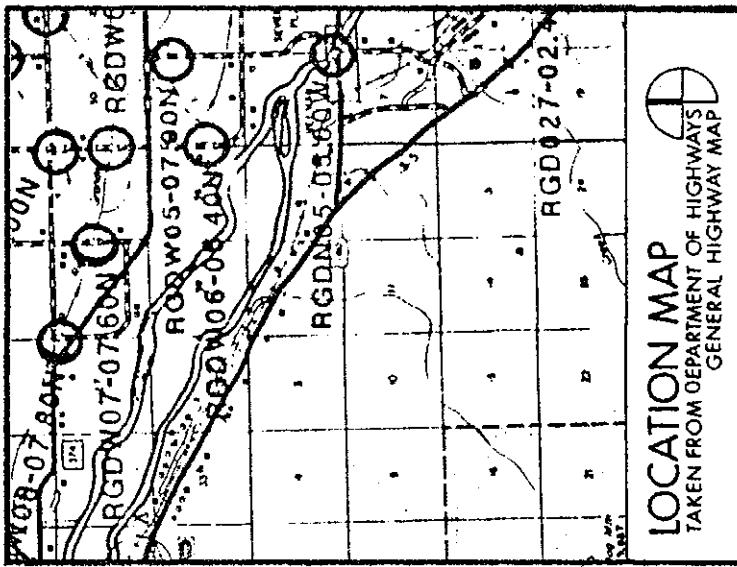
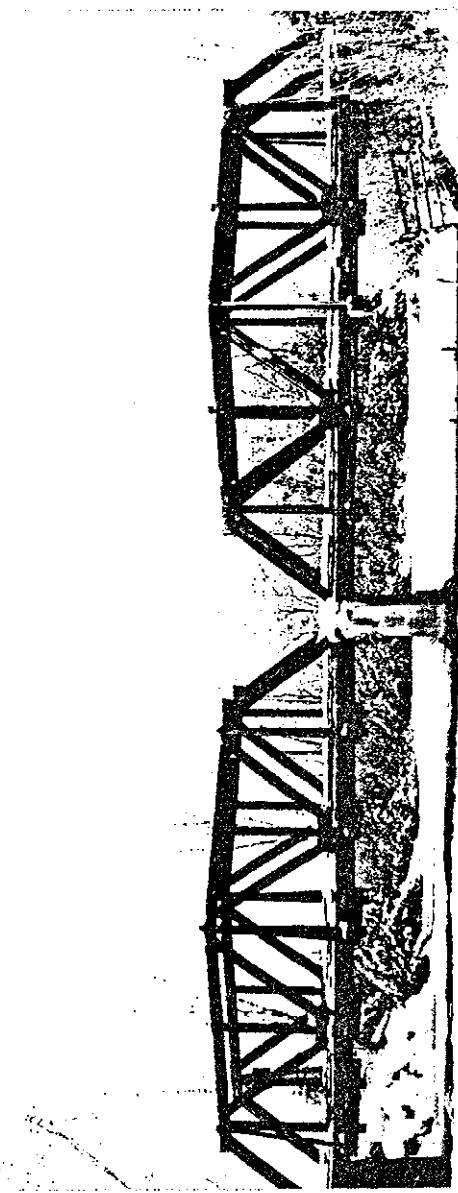
Colorado Historic Bridge Survey (Page 199)  
HAER No. CO-30

Erected in 1924, probably by local labor, the Sutherland Bridge was put up over the Rio Grande River as a private access to the Sutherland Ranch east of Del Norte. It is a replacement span for an earlier wood bridge at this location, and the log kingpost approach span on the north portal appears to be a remnant of the earlier structure. The Sutherland Bridge is identical to another privately owned crossing, two miles downstream, built four years later. Both are rigidly connected, with steel gusset plates at the connections of the diagonals with the upper and lower chords; both also feature unusual sloped top chords. Still privately owned, the Sutherland Bridge is today in fair condition, under relatively light usage.

14. CONDITION  EXCELLENT  GOOD  FAIR  DETERIORATED  RUINS  UNKNOWN  
15. DANGER OF DEMOLITION?  YES  NO  UNKNOWN  
(SPECIFY THREAT)

16. SIGNIFICANCE

The older of the two examples of this structural type, the Sutherland Bridge features an unusual adaptation of a bridge type usually associated with steel construction, executed with heavy timbers. It is a Warren pony truss - common enough for steel, but unusual as a timber structure. As such it is an interesting deviation from standard form, an unusual later truss example.



17 PHOTOS AND SKETCH MAP OF LOCATION

18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  UNKNOWN  
 NO

20. EXISTING SURVEYS  NR  HABS  HAER-1  
 COUNTY  LOCAL  OTHER

21. REFERENCES--HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Fred Olne, Rio Grande County Road Supervisor. Oral interview with Clayton Fraser, 9 January 1984.  
Ralph Off. Oral interview with Clayton Fraser, 15 March 1984. Off owns the adjacent ranch.  
Field inspection by Clayton Fraser, 4 January 1984

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign

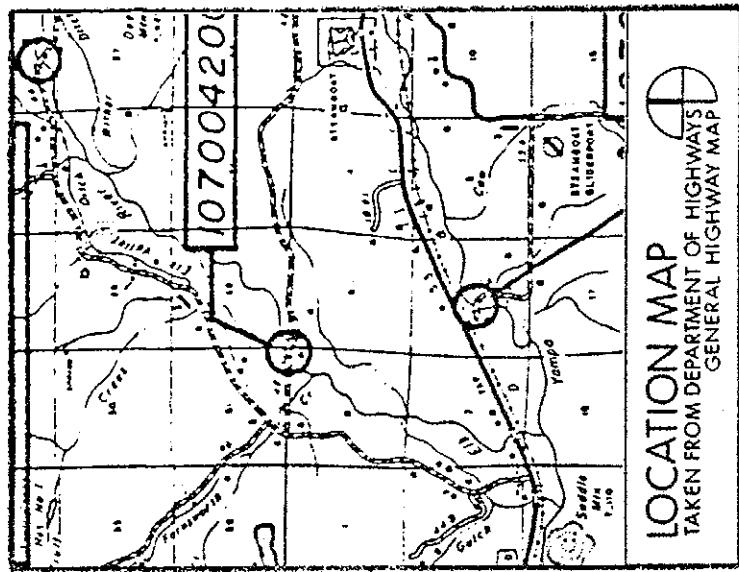
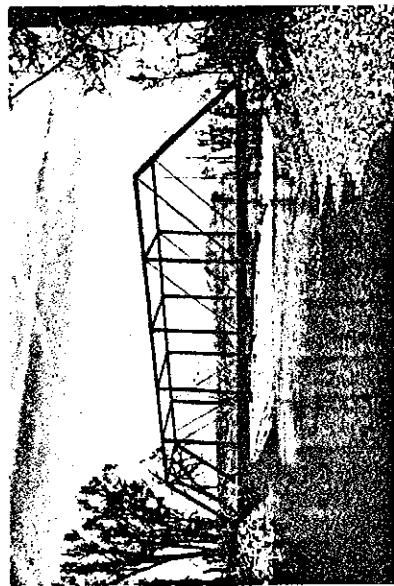
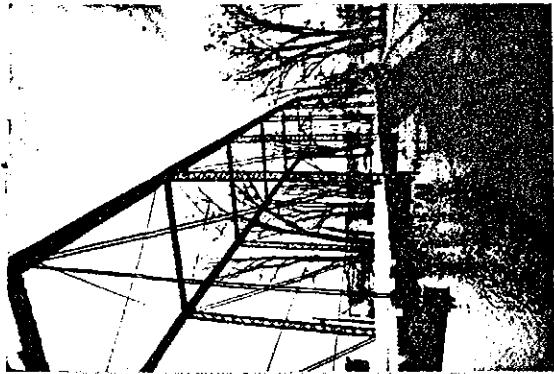
DATE  
15 March 1984

AFFILIATION  
Loveland Colorado  
DATE  
15 March 1984

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO												
2. NAME(S) OF STRUCTURE	Four Mile Bridge		roadway bridge		5. ORIGINAL USE		7. CLASSIFICATION		9. RATING			
Bridge over Elk River							BT&A: TRUSS: STEEL		7 6 0 3			
COH: 107004200.90045												
3. SITE ADDRESS (STREET & NO)	County Road 42 over Elk River		roadway bridge		6. PRESENT USE						10. DATE	
6.8 miles northwest of Steamboat Springs											1900	
NE¼ S6, T6N, R85W												
4. CITY/VICINITY	Steamboat Springs vicinity		Routt		8. UTM ZONE		EASTING		NORTHING		11. REGION	
COUNTY					1 3		3 3 4 5 2 5		4 4 8 6 5 4		RMRO	
12. OWNER/ADMIN ADDRESS	Routt County		Courthouse		STATE		SCALE		QUAD NAME			
Routt County					Colorado		1:24 OTHER		1:62.5		Mad Creek	
13. DESCRIPTION AND BACKGROUND HISTORY (INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.)	Routt County Courthouse 5th and Lincoln Steamboat Springs Colorado											
Pin-connected, 7-panel steel Pratt through truss	span number: 1 end/top chrd: 2 channels w/ cover and batten plates span length: 119' 0" bottom chord: 2 rectangular eyebars overall length: 122' 0" vertical: 2 rd. eyebars @ end panel; 2 channels w/ lacing @ other overall height: 20' 3" diagonal: 2 rectangular eyebars; 1 square eyebar w/ turnbuckle clearance htgt.: 13' 11" flr./decking: timber decking and stringers w/ steel floor beams roadway width: 14' 2" substructure: ashlar stone wingwalls											
On the first of October 1900 the Routt County commissioners opened construction bids for two steel bridges - this span over the Elk River and another over the Bear (Yampa) River. Contracts for both were awarded to the Wrought Iron Bridge Company of Canton, Ohio; this bridge for \$3095, the other \$6098. Erection began later that year and was completed by April 1901. Despite its lightweight components and lack of top lateral bracing for the verticals, this pinned Pratt through truss has remained in place, unaltered and in relatively good condition.												
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)		<input type="checkbox"/> YES		<input type="checkbox"/> NO		<input checked="" type="checkbox"/> UNKNOWN
16. SIGNIFICANCE	The oldest vehicular bridge over the Elk River, the Four Mile Bridge is also the oldest bridge in Routt County and shares the distinction as the oldest bridge in northwest Colorado with the Hay's Ranch Bridge (RB03) over the White River in Rio Blanco County. It is one of the last bridges erected by the Wrought Iron Bridge Company following the consolidation of that firm into the American Bridge Company in 1900. Although a common bridge type: a pinned Pratt through truss, this span is notable for its unaltered stone abutments and steel superstructure. In pristine condition and setting, it is a significant example of early truss construction.											



17. PHOTOS AND SKETCH MAP OF LOCATION

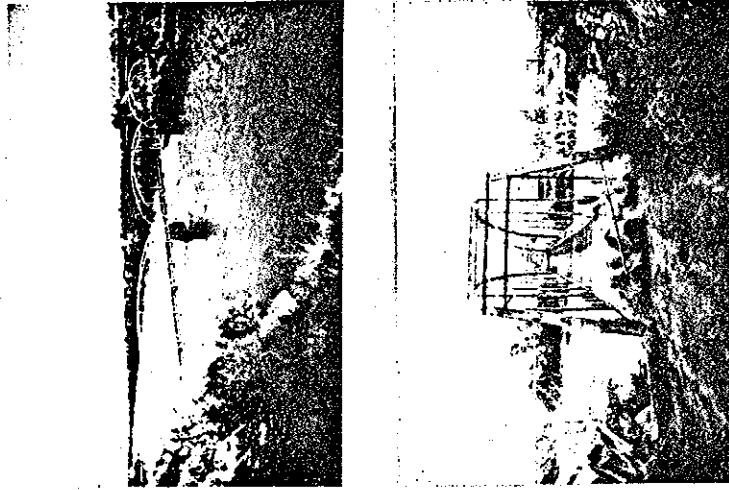
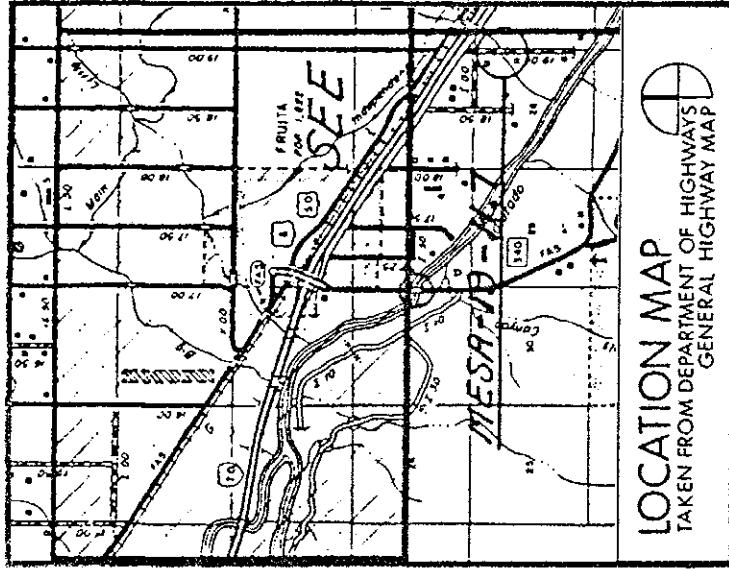
18. LOCATED IN AN HISTORIC DISTRICT?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> NAME _____
19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, UNLIMITED	<input checked="" type="checkbox"/> YES, LIMITED	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEYS	<input type="checkbox"/> NR	<input type="checkbox"/> COUNTY	<input type="checkbox"/> HABS
		<input type="checkbox"/> LOCAL	<input type="checkbox"/> HAER
		<input type="checkbox"/> OTHER	<input type="checkbox"/> NPS
			<input checked="" type="checkbox"/> STATE
21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER			
<p>Structure Inventory and Appraisal: 107004200.90045. Colorado Department of Highways, Denver Colorado.</p> <p>Routt County Commissioners' Minutes: 1 October 1900 (Book 2, page 247), 7 November 1900 (Book 2, page 256), 7 January 1901 (Book 2, page 257), 7 January 1901 (Book 2, page 268), 1 April 1901 (Book 2, page 272). Routt County Courthouse, Steamboat Springs Colorado.</p> <p>Field inspection by Clayton Fraser and Carl Hallberg. 17 October 1983.</p> <p>James Douglas, Routt County Engineer. Oral interview with Clayton Fraser. 17 October 1983.</p> <p>"Organization of the American Bridge Company." <u>Electrical World and Engineer</u>, Vol. XXXVI, Number 1 (7 July 1900). page 38.</p>			
22. INVENTORIED BY	Clayton Fraser and Carl Hallberg		
AFFILIATION	Fraserdesign Loveland Colorado		
DATE	22 November 1983		

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO.										
2. NAME(S) OF STRUCTURE	Fruita Bridge; State Bridge Bridge over Colorado River									
3. SITE ADDRESS (STREET & NO.)	County Road 17.50 over Colorado River 1.6 miles south of Fruita SW <sup>1</sup> S26, T1N, R2W									
4. CITY/VICINITY	Fruita vicinity									
5. ORIGINAL USE	roadway bridge									
6. PRESENT USE	roadway bridge (abandoned)									
7. CLASSIFICATION	BT&A: TRUSS: STEEL									
8. UTM ZONE	1		2		3		4		5	
SCALE	1:24		1:62.5		1:62.5		1:62.5		1:62.5	
12. OWNER/ADMIN ADDRESS	Mesa County Courthouse 619 East Main Grand Junction Colorado									
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTING EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.										
<p>Pin-connected, 8-panel steel Parker through truss</p> <p>span number: 3  span length: 155' 0"  overall length: 472' 0"  overall height: 28' 11"  clearance hgt.: 14' 1"  roadway width : 15' 3"</p> <p>end/top chrd: 2 channels w/ cover plate and lacing  bottom chord: 2 rectangular eyebars  vertical: 2 channels w/ lacing  diagonal: 2 rectangular eyebars; 2 round eyebars w/ turnbuckles  flr./decking: timber decking and stringers w/rolled steel floor beams  substructure: steel-cased concrete piers</p>										
<p>The Town of Fruita first approached the Mesa County Board of Commissioners and then the State Legislature in 1905 for a bridge over the Grand (Colorado) River south of town. Town and county came to terms early in 1906, and the state agreed the following year to allocate \$3000 for the construction expense. The M.J. Patterson Construction Company of Denver was contracted in June 1906 to erect this three-span pinned Parker through truss for \$17,763, and work on the abutments began soon after. Using steel components forged by the Carnegie and Jones and Laughlin mills, Patterson completed the bridge in late March 1907. Despite some initial subsidence of one of the piers, it was put into use later that spring and served for years as the main highway from Fruita south. In 1970 the road was realigned and the bridge replaced. Its stringers and beams have since been damaged by fire, but the truss remains otherwise intact.</p>										
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> GOOD	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> UNKNOWN		
16. SIGNIFICANCE	A regionally important early roadway crossing of the Colorado River, the Fruita Bridge is significant as one of a handful of spans left in the state associated with notable local bridge engineer M.J. Patterson. It is the oldest of the three pinned Parker through trusses in the survey (others: Rifle Bridge (GA06) and Nyberg Bridge (PU05)) and is one of only two pinned trusses with more than two spans in succession (other: Powers Bridge (BE01)). The most visually striking example left of a once-common vehicular truss type, the Fruita Bridge is one of Colorado's most outstanding bridges.									

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  NO  UNKNOWN  
21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

20. EXISTING SURVEYS  NR  NHL  HABS  HAER  NPS  STATE  
 COUNTY  LOCAL  HAER-1  OTHER

**Vertical files of State Engineer: Mesa County Bridge, Fruita.** Colorado Department of Highways, Denver Colorado.

Mesa County Commissioners' Minutes: 1 August 1904 (Book 3, page 365), 12 February 1905 (Book 3, page 462), 16 February 1905 (Book 3, page 463), 12 April 1906 (Book 3, page 475), 17 April 1906 (Book 3, page 477), 31 December 1906 (Book 4, page 17). Mesa County Courthouse, Grand Junction Colorado.  
14th Biennial Report of the State Engineer, Colorado: 1907-1908. Denver Colorado: Smith-Brooks Printing Company, 1909. page 117.

Field inspection by Clayton Fraser and Susan Cason. 19 November 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

DATE

Fraserdesign Loveland Colorado 30 November 1983

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

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1. SITE I.O. NO

2. NAME(S) OF STRUCTURE Rainbow Arch Bridge; Fort Morgan Bridge MRO3	5. ORIGINAL USE highway bridge	6. PRESENT USE highway bridge	7. CLASSIFICATION BT&A: ARCH: REINFORCED CONCRETE	8. RATING
Bridge over South Platte River				9. RATING
CDH: C-21-C				10. DATE 1922
3. SITE ADDRESS (STREET & NO) State Highway 52 over South Platte River	6. UTM ZONE 1	7. EASTING 3	8. UTM ZONE 6	9. NORTHING 0
.8 mile north of Fort Morgan	1	0	1	0
SE <sub>1/4</sub> S31, T4N, R57W	3	9	5	0
4. CITY/VICINITY Fort Morgan vicinity	STATE Colorado	SCALE 1:24	QUAD NAME Ft. Morgan	11. REGION RMRO
12. OWNER/ADMIN ADDRESS Colorado Department of Highways	4201 East Arkansas Avenue	13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	Denver Colorado 80222	

13. SIGNIFICANCE

Multi-span reinforced concrete, fixed rainbow (Marsh) arch

span number: 11  
span length: 90'0"  
overall length: 1110'0"  
roadway width: 19'0"

flr./decking: concrete slab suspended from overhead arches  
substructure: solid concrete abutments and piers on driven piles  
guardrails : poured-in-place concrete doghouse guardrails

Colorado Historic Bridge Survey (Page 205)  
HAER No. CO-30

In April 1922, the Colorado State Highway Department and Morgan County made an agreement: each would pay half for a major bridge to replace the existing timber one moved in 1890 to this crossing of the South Platte River just north of Fort Morgan. Designed by the Marsh Engineering Company of Des Moines, Iowa, the multi-span rainbow arch was let for bids in June; the construction contract was awarded to Charles Sheely's Colorado Bridge and Construction Company - low bidder among thirteen respondents at \$69,290. By March, the pile foundations had been completed and work begun forming and pouring the arches. Construction was marred the next month by a fatality when a car crashed at the south approach. It was later delayed by early summer flooding in 1923, but in August the bridge was completed and opened to traffic. A second bridge was built beside the narrow arch in 1963 to relieve the traffic volume. Recently steel tension rods have been added to reinforce the southernmost three spans, but the bridge remains otherwise unaltered.

14. CONDITION

EXCELLENT

GOOD

FAIR

DETERIORATED

RUINS

15. DANGER OF DEMOLITION? (SPECIFY THREAT)

YES

NO

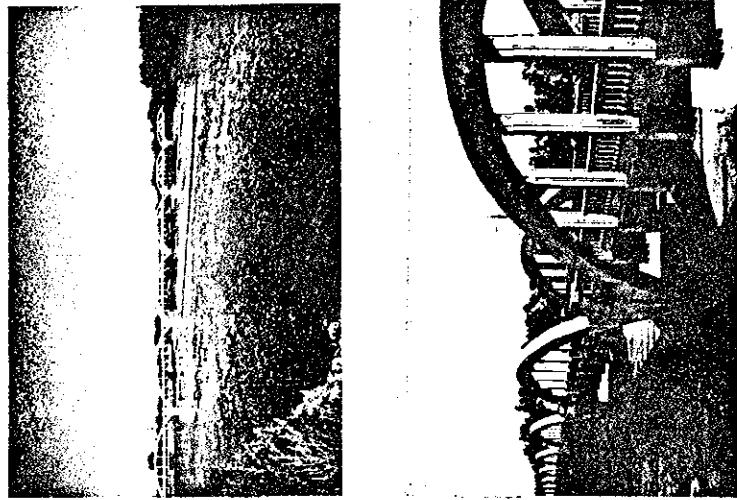
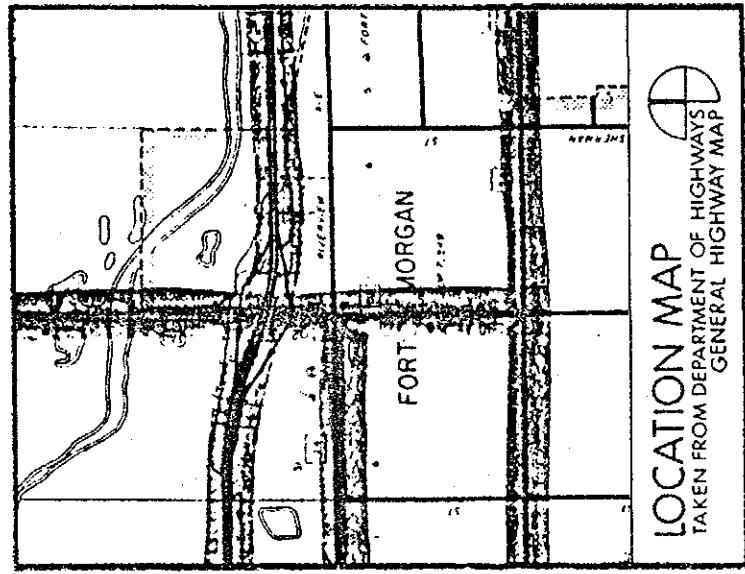
UNKNOWN

16. SIGNIFICANCE

Iowa engineer James Marsh patented his overhead concrete arch design, called the rainbow or Marsh arch, in 1912. Graceful and innovative, albeit expensive to construct, Marsh arches were built in limited numbers across the country up until the 1930s. At the time the Fort Morgan Bridge was built, it was claimed to be the longest Marsh arch bridge, with the greatest number of spans, in the world. It still may be. The last major bridge attributable to significant in-state contractor Charles Sheely, it is the only Marsh arch built in Colorado, and a regionally important crossing of a river notorious for flooding and a source of pride for the surrounding community, it is one of Colorado's most important vehicular bridges.

Colorado Historic Bridge Survey (Page 206)  
HAER No. CO-30

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  YES, UNLIMITED  UNKNOWN

20. EXISTING SURVEYS  NR  NHL  COUNTY  LOCAL  OTHER

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER  NO  HAER-1  NPS  STATE

Structure Inventory and Appraisal: C-21-C. Colorado Department of Highways, Denver Colorado.

Morgan County Commissioners' Minutes: 28 January 1890 (Book 1, page 58), 31 January 1890 (Book 1, page 61), 4 April 1922 (Book 4, pages 599-600), 5 July 1922 (Book 4, pages 629-32), 12 July 1922 (Book 4, pages 632-33), 1 August 1922 (Book 5, page 3), 2 August 1922 (Book 5, page 5), 2 April 1923 (Book 5, pages 71-72), 2 July 1923 (Book 5, page 92), 27 August 1923 (Book 5, page 101). Morgan County Courthouse, Fort Morgan Colorado.

Leland F. James. "Fort Morgan Bridge Opened," Colorado Highways, Vol. 2, Number 8 (August 1923), pages 4-5. Sue Spencer. "The Rainbow Bridge," undated manuscript.

Builder's plate on bridge: "Rainbow Arch Bridge Built by Charles G. Sheely Denver, Colo. 1922 Designed by Marsh Engineering Company Des Moines, Iowa".

Field inspection by Clayton Fraser and Carl Hallberg, 16 August 1983.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign

DATE  
18 January 1984

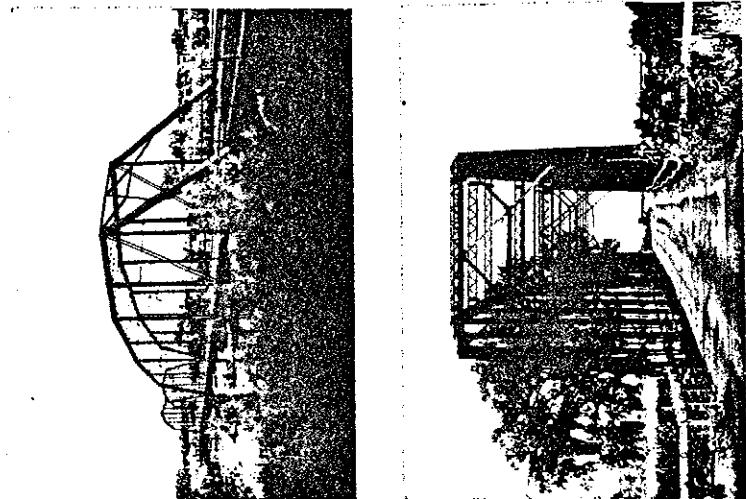
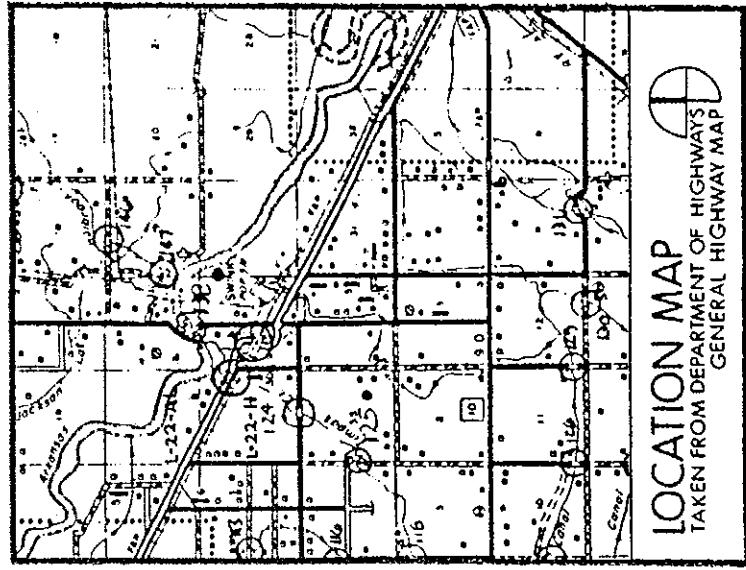
LOCATED  
Loveland Colorado

# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.O. NO			5. ORIGINAL USE	7. CLASSIFICATION	9. RATING														
2. NAME(S) OF STRUCTURE	Swink Bridge		OT05	roadway bridge	BT&A: TRUSS: STEEL	7	6	0	3										
3. SITE ADDRESS (STREET & NO)	Bridge over Arkansas River		6. PRESENT USE		10. DATE	1921													
CDH: OT245-24-26-138	County Road 24.5 over Arkansas River		Roadway bridge																
4. CITY/VICINITY	0.9 mile north of Swink		STATE	8. UTM ZONE	EASTING	NORTHING	11. REGION												
Swink Vicinity	SW¼ S24, T23S, R56W		Otero	1	3	6	2	0	3	9	0	4	2	0	9	5	0	0	RMRO
12. OWNER/ADMIN ADDRESS	Otero County		COUNTY	SCALE	1:24	1:62.5	QUAD NAME	Rocky Ford											
13. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	Pin-connected, 8-panel steel Camelback through truss																		
<p>Despite placement of upstream piles in 1911 to protect the existing two-span truss over the Arkansas at Swink, the bridge was washed out by heavy spring flooding in 1921. In June the Otero County Commissioners advertised for bids for a replacement bridge. The following month proposals were received from the Levi Construction Company, Monarch Engineering Company, G.A. Dahlgren and the Pueblo Bridge Company. Pueblo, which had built the majority of the county's bridges over the preceding decades, was awarded the contract for \$22,300. This two-span truss was built on the existing piers, extended 4' for greater clearance over the river. The bridge remains in use in fair condition.</p>																			
14. CONDITION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	15. DANGER OF DEMOLITION? (SPECIFY THREAT)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN	Scheduled for replacement										
16. SIGNIFICANCE	The Swink Bridge is significant for its retardaire construction - a vehicular pin-connected through truss erected at a time when the technology for riveted connections predominated. This may be due to the fact that it was a replacement bridge, placed on the existing pier and abutments of the previous pinned truss. (One other pinned through truss was built later in this survey: the remote Pinon Canon Bridge (LS08), built in 1929.) Erected by the Pueblo Bridge Company, arguably the most important of the Colorado-based bridge contractors, it is one of only two remaining early roadway trusses over the lower Arkansas River Valley, a region which had once featured several of the state's longest trussed crossings. The Swink Bridge is a significant anachronism, which was determined eligible for NRHP in 1983.																		

17. PHOTOS AND SKETCH MAP OF LOCATION



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME

19. PUBLIC ACCESSIBILITY  YES, LIMITED  UNKNOWN  NO

20. EXISTING SURVEYS  NR  COUNTY  LOCAL  OTHER  HAER  NPS  STATE

21. REFERENCES-HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

**Structure Inventory and Appraisal:** OT245-24-26-138. Colorado Department of Highways, Denver Colorado.  
Otero County Commissioners' Minutes: 6 May 1911 (Book 6, page 211), 20 June 1921 (Book 7, page 588), 1 July 1921 (Book 7, page 589-90). Otero County Courthouse, La Junta Colorado.

Rick Klein, Otero County Engineer. Oral interview with Clayton Fraser, 22 August 1983.

Field inspection by Clayton Fraser and Carl Hallberg. 19 August 1983.

Highway Planning Survey Photograph. Colorado Department of Highways, Denver Colorado. 5 June 1936.

22. INVENTORIED BY  
Clayton Fraser and Carl Hallberg

AFFILIATION  
Fraserdesign

Loveland Colorado

DATE  
22 August 1983

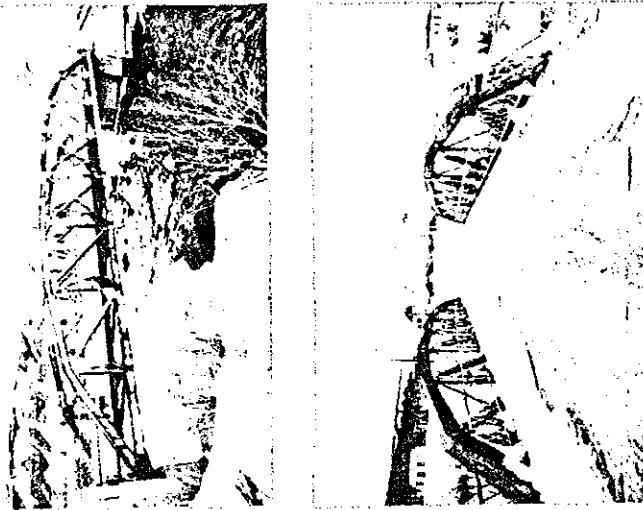
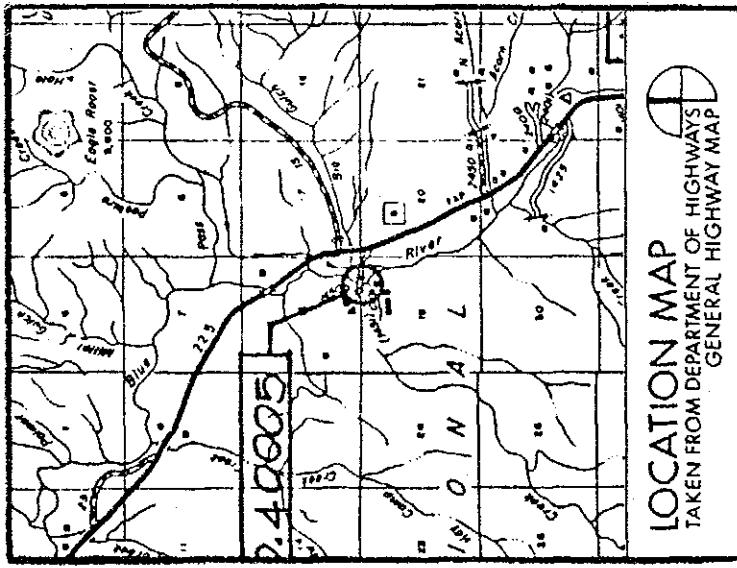
# HABS/HAER INVENTORY

U.S. Department of the Interior  
National Park Service  
Washington, DC 20240

1. SITE I.D. NO			
2. NAME(S) OF STRUCTURE	Slate Creek Bridge over Blue River	5. ORIGINAL USE	roadway bridge
CDH:	117145000.40005	6. PRESENT USE	roadway bridge
3. SITE ADDRESS (STREET & NO)	County Road 1450 over Blue River 12.6 miles north of Dillon SE $\frac{1}{4}$ S18, T3S, R78W	7. CLASSIFICATION	BT&A: TRUSS: STEEL
4. CITY/VICINITY	Summit	8. UTM ZONE	1 3
5. COUNTY	Colorado	9. EASTING	4 0 0 5 0 5
6. OWNER/ADMIN ADDRESS	Summit County	10. NORTHING	4 4 0 4 1 6
7. DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), MATERIALS, MAJOR ALTERATIONS, EXISTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.	Summit County Courthouse 208 East Lincoln Breckenridge Colorado 80424		

13. DETERIORATION	<input type="checkbox"/> EXCELLENT	<input checked="" type="checkbox"/> FAIR	<input type="checkbox"/> GOOD
14. CONDITION	<input type="checkbox"/> DETERIORATED	<input type="checkbox"/> RUINS	
15. SIGNIFICANCE	Erected as a standard truss design by American Bridge, the Slate Creek Bridge is one of only two examples in the survey of this Pratt subtype - the riveted Parker pony. The other, the San Francisco Creek Bridge (LS30), was erected in 1926 and subsequently moved, leaving this bridge as the only definitively traceable example of this untypical later highway bridge type.		
16. DANGER OF DEMOLITION?	<input type="checkbox"/> YES <small>(SPECIFY THREAT)</small>		
17. REGION	<input type="checkbox"/> NO <input checked="" type="checkbox"/> UNKNOWN		

17. PHOTOS AND SKETCH MAP OF LOCATION.



18. LOCATED IN AN HISTORIC DISTRICT?  YES  NO  NAME \_\_\_\_\_

19. PUBLIC ACCESSIBILITY	<input type="checkbox"/> YES, LIMITED	<input checked="" type="checkbox"/> YES, UNLIMITED	<input type="checkbox"/> NO	<input type="checkbox"/> UNKNOWN
20. EXISTING SURVEY				
<input type="checkbox"/> NPS		<input type="checkbox"/> NHL	<input type="checkbox"/> HAER	<input type="checkbox"/> NPS
<input type="checkbox"/> COUNTY		<input type="checkbox"/> LOCAL	<input type="checkbox"/> OTHER	

21. REFERENCES—HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

- Structure Inventory and Appraisal: 117145000.40005. Colorado Department of Highways, Denver Colorado.  
 "Contracts Awarded during May," Colorado Highways, Vol. 2, Number 6 (June 1923). page 18.  
 "Reports from the Divisions," Colorado Highways, Vol. 3, Number 4 (April 1924). page 14.  
 "Reports from the Divisions," Colorado Highways, Vol. 3, Number 8 (August 1924). pages 10-11.  
 Builder's plate on bridge: "Colorado State Highway Department 1924 Rogers and Pickard Contractors  
 Steel Work by American Bridge Co."  
 Field inspection by Clayton Fraser, 15 February 1984.

22. INVENTORIED BY

Clayton Fraser and Carl Hallberg

AFFILIATION

Fraserdesign Loveland Colorado

DATE

1 March 1984